UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 10,176,848 C1
APPLICATION NO. : 90/014641
DATED : March 18, 2022
INVENTOR(S) : Mari Yoshida

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims

Column 1, Lines 23-50, substitute Claim 21 with the following claim:

--21. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a processor; and

a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:

capture a photograph and generate image information of the photograph;

record the image information in a recording medium;

execute a face-recognizing process on the image information to recognize a face;

reproduce the recorded image from the recording medium;

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, an image information of a person with a face is obtained by newly photographing the person with a face in a photographing mode and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person, and, when the second setting mode is selected, a person with a face in an image information of a person with a face is selected from a plurality of faces in the image information recorded in the recording medium and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person; and

selectively reproduce the recorded image information which includes the registered specific person,

wherein, when a registered specific person is recognized during a capture of additional image information, autofocus and autoexposure are adjusted for the additional image information of the registered specific person.--

Column 1, Line 51 to Column 2, Line 9, substitute Claims 22, 23, and 24 with the following claims:

--22. The recording and reproducing apparatus according to claim 21, wherein, in the second

Signed and Sealed this
Third Day of May, 2022

Katherine Kelly Vidal

Katherine Kelly Vidal
Director of the United States Patent and Trademark Office

setting mode, the image information to be selectively reproduced is the image information which is recognized as including the specific person before the recording of the image information.

23. The recording and reproducing apparatus according to claim 21, wherein the image information to be selectively reproduced is the image information having a relatively high importance level picked out among the image information recorded in the recording medium which includes the registered specific person.

24. The recording and reproducing apparatus according to claim 21, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.--

Column 2, Lines 25 to 36, substitute Claims 25, 26, 27, 28, and 29 with the following claims:
--25. The recording and reproducing apparatus according to claim 24, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode,

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

26. The recording and reproducing apparatus according to claim 21, further comprising a touch panel adhered to a screen of a display.

27. The recording and reproducing apparatus according to claim 26, wherein the first setting mode and the second setting mode are each selected using the touch panel via a user interface.

28. The recording and reproducing apparatus according to claim 21, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

29. The recording and reproducing apparatus according to claim 21, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.--

Column 2, Lines 37 to 61, substitute Claims 30, 31, 32, 33, and 34 with the following claims:
--30. The recording and reproducing apparatus according to claim 21, wherein the recording and reproducing apparatus is a mobile phone.

31. The recording and reproducing apparatus according to claim 21, wherein the recording and reproducing apparatus is an electronic camera.

32. The recording and reproducing apparatus according to claim 21, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.

33. The recording and reproducing apparatus according to claim 21, further comprising

a video camera providing image data; and

a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

34. The recording and reproducing apparatus according to claim 33, wherein the frame is a rectangular frame.--

Column 2, Line 62 to Column 3, Line 21, substitute Claims 35, 36, 37, and 38 with the following claims:

--35. The recording and reproducing apparatus according to claim 21, further comprising a display,

wherein the memory further stores instructions that, when executed by the processor, cause the processor to generate a thumbnail corresponding to the recorded image such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.

36. The recording and reproducing apparatus according to claim 35, wherein the icon is displayed on the thumbnail.

37. The recording and reproducing apparatus according to claim 21, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

capture video information corresponding to a scene;

automatically set a plurality of sections corresponding to the video information of the scene;

generate a plurality of thumbnails corresponding to the plurality of sections; and

display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.

38. The recording and reproducing apparatus according to claim 37, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.--

Column 3, Lines 22 to 50, substitute Claims 39, 40, 41, and 42 with the following claims:

--39. The recording and reproducing apparatus according to claim 21, further comprising a display,

wherein the display is configured to display a plurality of images,

wherein each image in the plurality of images includes a face of a different person, and

wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

40. The recording and reproducing apparatus according to claim 21, wherein the memory further stores instructions that, when executed by the processor, cause the processor to execute the face-recognizing process on image information captured from an external camera not included in the recording and reproducing apparatus.

41. The recording and reproducing apparatus according to claim 21, further comprising:

an analog/digital converter, wherein the analog/digital converter is configured to convert analog image data corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information,

wherein the encoded image information is stored in the memory.

42. The recording and reproducing apparatus according to claim 41, wherein the predetermined compression encoding method is an MPEG method.--

Column 3, Line 51 to Column 4, Line 20, substitute Claim 43 with the following claim:

--43. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face,

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, an image information of a person with a face is obtained by newly photographing the person with a face in a photographing mode and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person, and, when the second setting mode is selected, a person with a face in an image information of a person with a face is selected from a plurality of faces in the image information recorded in the recording medium, and thereafter, the image information of the person with a face is used to register the person with a face as the specific person,

firstly pick out image information which includes the registered specific person,

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition,

wherein, when a registered specific person is recognized during a capture of additional image information, autofocus and autoexposure are adjusted for the additional image information of the registered specific person.--

Column 4, Lines 21 to 64, substitute Claims 44, 45, 46, and 47 with the following claims:

--44. The recording and reproducing apparatus according to claim 43, wherein, in the second

setting mode, the image information to be selectively and sequentially reproduced is the image information which is recognized as including the specific person before the recording of the image information by the recorder.

45. The recording and reproducing apparatus according to claim 43, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information having the predetermined condition including a relatively high importance level picked out from among the image information recorded in the recording medium which includes the registered specific person.

46. The recording and reproducing apparatus according to claim 43, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

47. The recording and reproducing apparatus according to claim 46, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.--

Column 4, Line 65 to Column 5, Line 27, substitute Claims 48, 49, 50, 51, 52, 53, and 54 with the following claims:
--48. The recording and reproducing apparatus of claim 43, further comprising a touch panel adhered to a screen of a display.

49. The recording and reproducing apparatus of claim 48, wherein the first setting mode and the second setting mode are each selected using the touch panel via a user interface.

50. The recording and reproducing apparatus according to claim 43, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

51. The recording and reproducing apparatus according to claim 43, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.

52. The recording and reproducing apparatus according to claim 43, wherein the recording and reproducing apparatus is a mobile phone.

53. The recording and reproducing apparatus according to claim 43, wherein the recording and reproducing apparatus is an electronic camera.

54. The recording and reproducing apparatus according to claim 43, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.--

Column 5, Lines 28 to 58, substitute Claims 55, 56, 57, 58, and 59 with the following claims:

--55. The recording and reproducing apparatus according to claim 43, further comprising:

a video camera providing image data; and

a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

56. The recording and reproducing apparatus according to claim 55, wherein the frame is a rectangular frame.

57. The recording and reproducing apparatus according to claim 43, further comprising a display,

wherein the processing circuitry is further configured to generate a thumbnail corresponding to the recorded image such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.

58. The recording and reproducing apparatus according to claim 57, wherein the icon is displayed on the thumbnail.

59. The recording and reproducing apparatus according to claim 43, wherein the processing circuitry is further configured to:

capture video information corresponding to a scene;

automatically set a plurality of sections corresponding to the video information of the scene;

generate a plurality of thumbnails corresponding to the plurality of sections; and

display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.--

Column 5, Line 59 to Column 6, Line 24, substitute Claims 60, 61, 62, 63, and 64 with the following claims:

--60. The recording and reproducing apparatus according to claim 59, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.

61. The recording and reproducing apparatus according to claim 43, further comprising a display,

wherein the display is configured to display a plurality of images,

wherein each image in the plurality of images includes a face of a different person, and

wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

62. The recording and reproducing apparatus according to claim 43, wherein the processing circuitry is further configured to execute the face-recognizing process on image information captured from an external camera not included in the recording and reproducing apparatus.

63. The recording and reproducing apparatus according to claim 43, further comprising:
an analog/digital converter, wherein the analog/digital converter is configured to convert analog image data corresponding to the captured photograph into a digital image signal; and
a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information,
wherein the encoded image information is stored in the memory.

64. The recording and reproducing apparatus according to claim 63, wherein the predetermined compression encoding method is an MPEG method.--

Column 6, Lines 25 to 54, substitute Claim 65 with the following claim:
--65. A recording and reproducing apparatus for recording and reproducing image information, comprising:
a photographing sensor configured to photograph an object and generate image information;
a recorder configured to record the image information generated by the photographing sensor in a recording medium;
a reproducer configured to reproduce the image information recorded by the recorder;
processing circuitry configured to:
execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face;
register a person in the image information as a specific person, wherein an image information of a person with a face is obtained by newly photographing the person with a face in a photographing mode and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person;
firstly pick out an image information which includes the registered specific person,
secondly pick out an image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and
control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition,
wherein, when a registered specific person is recognized during a capture of additional image information, autofocus and autoexposure are adjusted for the additional image information of the registered specific person.--

Column 6, Line 55 to Column 7, Line 28, substitute Claims 66, 67, 68, 69, and 70 with the following claims:
--66. The recording and reproducing apparatus according to claim 65, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing

mode set from one of a first reproducing mode and a second reproducing mode, and wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

67. The recording and reproducing apparatus according to claim 65, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

68. The recording and reproducing apparatus of claim 65, further comprising a touch panel adhered to a screen of a display.

69. The recording and reproducing apparatus according to claim 65, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

70. The recording and reproducing apparatus according to claim 65, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.--

Column 7, Lines 29 to 59, substitute Claims 71, 72, 73, 74, 75, and 76 with the following claims:
--71. The recording and reproducing apparatus according to claim 65, wherein the recording and reproducing apparatus is a mobile phone.

72. The recording and reproducing apparatus according to claim 65, wherein the recording and reproducing apparatus is an electronic camera.

73. The recording and reproducing apparatus according to claim 65, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.

74. The recording and reproducing apparatus according to claim 65, further comprising:

a video camera providing image data; and

a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

75. The recording and reproducing apparatus according to claim 74, wherein the frame is a rectangular frame.

76. The recording and reproducing apparatus according to claim 65, further comprising a display, wherein the processing circuitry is further configured to generate a thumbnail corresponding to the recorded image such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.--

Column 7, Line 60 to Column 8, Line 24, substitute Claims 77, 78, 79, 80, and 81 with the following claims:
--77. The recording and reproducing apparatus according to claim 76, wherein the icon is displayed on the thumbnail.

78. The recording and reproducing apparatus according to claim 65, wherein the processing circuitry is further configured to:

capture video information corresponding to a scene;

automatically set a plurality of sections corresponding to the video information of the scene;

generate a plurality of thumbnails corresponding to the plurality of sections; and

display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.

79. The recording and reproducing apparatus according to claim 78, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.

80. The recording and reproducing apparatus according to claim 65, further comprising a display,

wherein the display is configured to display a plurality of images,

wherein each image in the plurality of images includes a face of a different person, and

wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

81. The recording and reproducing apparatus according to claim 65, wherein the processing circuitry is further configured to execute the face-recognizing process on image information captured from an external camera not included in the recording and reproducing apparatus.--

Column 8, Lines 25 to 36, substitute Claims 82 and 83 with the following claims:
--82. The recording and reproducing apparatus according to claim 65, further comprising:

an analog/digital converter, wherein the analog/digital converter is configured to convert analog image data corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information.

83. The recording and reproducing apparatus according to claim 82, wherein the predetermined compression encoding method is an MPEG method.--

Column 8, Line 37 to Column 9, Line 12, substitute a portion of Claim 84 with the following portion:
--84. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a processor;

a display displaying a first option and a second option, wherein when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information;

a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:

capture a photograph and generate image information of the photograph;

record the image information in a recording medium;

execute a face-recognizing process on the image information to recognize a face;

reproduce the recorded image from the recording medium;

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, an image information of a person with a face is obtained by newly photographing the person with a face in a photographing mode and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person, and, when the second setting mode is selected, a person with a face in an image information of a person with a face is selected from a plurality of faces in the image information recorded in the recording medium and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person;

selectively reproduce the recorded image which includes the registered specific person; and

generate a thumbnail corresponding to the recorded image in the recording medium such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface;--

Column 9, Line 13 to Column 10, Line 23, substitute the remaining portion of Claim 84 with the following portion:

--a touch panel adhered to a screen of the display, wherein the first setting mode and the second setting mode are each selected using the touch panel;

a video camera providing video image data, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the video image data, the display displays the video image data with a frame surrounding at least a portion of the face of the person;

an analog/digital converter, wherein the analog/digital converter is configured to convert analog image data corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information, wherein the encoded image information is stored in the recording medium,

wherein the video camera captures video information corresponding to a scene and the processor:

automatically sets a plurality of sections corresponding to the video information of the scene; and

generates a plurality of thumbnails corresponding to the plurality of sections, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene, and the display displays the plurality of thumbnails; and

wherein the display is configured to display at least a plurality of images recorded in the recording medium such that contents of each image in the plurality of images includes a face of a different person and background objects and displaying the plurality of images includes displaying the faces

without displaying all of the background objects included in the contents of each image of the plurality of images.--

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Patent No.: 10,176,848 C1
Issue Date: 03/18/2022
Appl. No.: 90/014,641
Filed: 12/23/2020

PART (A) RESPONSE FOR CERTIFICATES OF CORRECTION

This is a decision on the Certificate of Correction request filed 06 April 2022.

The request for issuance of Certificate of Correction for the above-identified correction(s) under the provisions of 37 CFR 1.322 and/or 1.323 is hereby:

(Check one)
☑ Approved ☐ Approved in Part ☐ Denied

Comments: Claims 21-83 published in the patent were not the final version approved by the examiner . Claims 21-83 filed in the CoC request represents the version which should have been published. Regarding claim 84, the amendments do not affect the scope of the claim.

PART (B) PETITION UNDER 37 CFR 1.324 OR 37 CFR 1.48

☐ This is a decision on the petition filed ____ to correct inventorship under 37 CFR 1.324.

☐ This is a decision on the request under 37 CFR 1.48, petition filed ____. In view of the fact that the patent has already issued, the request under 37 CFR 1.48 has been treated as a petition to correct inventorship under 37 CFR 1.324.

The petition is hereby: ☐ Granted ☐ Dismissed

Comment: ____

The patented filed is being forwarded to Certificate of Corrections Branch for issuance of a certificate naming only the actual inventor or inventors.

/Stephen Stein/
Technology Center 3900
Phone: (571)272-4185

Certificates of Correction Branch email: CustomerServiceCoC@uspto.gov CoC Central Phone Number: (703) 756-1814

Exhibit A

OK TO ENTER
-- BJP 1/5/2022

(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reexamination of:

Yoshida

Reexamination Control No. 90/014,641

Patent Under Reexamination: U.S. Pat. No. 10,176,848	Confirmation No.: 3601
Issue Date: January 8, 2019	Art Unit: 3992
Title: Recording and Reproducing Apparatus and Method Thereof	Examiner: B. James Peikari

RESPONSE TO FINAL OFFICE ACTION

Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
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Alexandria, VA 22313-1450

Commissioner Faile,

Patent Owner respectfully submits this Response to the Final Office Action mailed November 24, 2021, regarding the above-captioned *Ex parte* Reexamination.

A **listing of claims and claim amendments** begin on page 2; and

Remarks begin on page 23.

The Commissioner is hereby authorized to charge any required fees or credit any overpayment of fees to Deposit Account No. 19-0733.

PTO/SB/44 (09-07)
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UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 10,176,848 C1

APPLICATION NO. : 90/014,641

ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 1, Lines 23-50, substitute claim 21 with the following claim:

--21. A recording and reproducing apparatus for recording and reproducing image information, comprising:
a processor; and
a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:
capture a photograph and generate image information of the photograph;
record the image information in a recording medium;
execute a face-recognizing process on the image information to recognize a face;
reproduce the recorded image from the recording medium;
register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, an image information of a person with a face is obtained by newly photographing the person with a face in a photographing mode and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person, and, when the second setting mode is selected, a person with a face in an image information of a person with a face is selected from a plurality of faces in the image information recorded in the recording medium and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person; and
selectively reproduce the recorded image information which includes the registered specific person,
wherein, when a registered specific person is recognized during a capture of additional image information, autofocus and autoexposure are adjusted for the additional image information of the registered specific person.--

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As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 1, Line 51 to Column 2, Line 9, substitute claims 22, 23, and 24 with the following claims:

--22. The recording and reproducing apparatus according to claim 21, wherein, in the second setting mode, the image information to be selectively reproduced is the image information which is recognized as including the specific person before the recording of the image information.

23. The recording and reproducing apparatus according to claim 21, wherein the image information to be selectively reproduced is the image information having a relatively high importance level picked out among the image information recorded in the recording medium which includes the registered specific person.

24. The recording and reproducing apparatus according to claim 21, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.--

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As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 2, Lines 25 to 36, substitute claims 25, 26, 27, 28, and 29 with the following claims:

--25. The recording and reproducing apparatus according to claim 24, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode,

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

26. The recording and reproducing apparatus according to claim 21, further comprising a touch panel adhered to a screen of a display.

27. The recording and reproducing apparatus according to claim 26, wherein the first setting mode and the second setting mode are each selected using the touch panel via a user interface.

28. The recording and reproducing apparatus according to claim 21, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

29. The recording and reproducing apparatus according to claim 21, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.--

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UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 10,176,848 C1

APPLICATION NO. : 90/014,641

ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 2, Lines 37 to 61, substitute claims 30, 31, 32, 33, and 34 with the following claims:

--30. The recording and reproducing apparatus according to claim 21, wherein the recording and reproducing apparatus is a mobile phone.

31. The recording and reproducing apparatus according to claim 21, wherein the recording and reproducing apparatus is an electronic camera.

32. The recording and reproducing apparatus according to claim 21, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.

33. The recording and reproducing apparatus according to claim 21, further comprising

a video camera providing image data; and

a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

34. The recording and reproducing apparatus according to claim 33, wherein the frame is a rectangular frame.--

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ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 2, Line 62 to Column 3, Line 21, substitute claims 35, 36, 37, and 38 with the following claims:

--35. The recording and reproducing apparatus according to claim 21, further comprising a display,
wherein the memory further stores instructions that, when executed by the processor, cause the processor to generate a thumbnail corresponding to the recorded image such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.

36. The recording and reproducing apparatus according to claim 35, wherein the icon is displayed on the thumbnail.

37. The recording and reproducing apparatus according to claim 21, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:
capture video information corresponding to a scene;
automatically set a plurality of sections corresponding to the video information of the scene;
generate a plurality of thumbnails corresponding to the plurality of sections; and
display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.

38. The recording and reproducing apparatus according to claim 37, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.--

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PATENT NO. : 10,176,848 C1

APPLICATION NO. : 90/014,641

ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 3, Lines 22 to 50, substitute claims 39, 40, 41, and 42 with the following claims:

--39. The recording and reproducing apparatus according to claim 21, further comprising a display,
wherein the display is configured to display a plurality of images,
wherein each image in the plurality of images includes a face of a different person, and
wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

40. The recording and reproducing apparatus according to claim 21, wherein the memory further stores instructions that, when executed by the processor, cause the processor to execute the face-recognizing process on image information captured from an external camera not included in the recording and reproducing apparatus.

41. The recording and reproducing apparatus according to claim 21, further comprising:
an analog/digital converter, wherein the analog/digital converter is configured to convert analog image data corresponding to the captured photograph into a digital image signal; and
a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information,
wherein the encoded image information is stored in the memory.

42. The recording and reproducing apparatus according to claim 41, wherein the predetermined compression encoding method is an MPEG method.--

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ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 3, Line 51 to Column 4, line 20, substitute claim 43 with the following claim:

--43. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face,

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, an image information of a person with a face is obtained by newly photographing the person with a face in a photographing mode and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person, and, when the second setting mode is selected, a person with a face in an image information of a person with a face is selected from a plurality of faces in the image information recorded in the recording medium, and thereafter, the image information of the person with a face is used to register the person with a face as the specific person,

firstly pick out image information which includes the registered specific person,

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition,

wherein, when a registered specific person is recognized during a capture of additional image information, autofocus and autoexposure are adjusted for the additional image information of the registered specific person.--

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ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 4, Lines 21 to 64, substitute claims 44, 45, 46, and 47 with the following claims:

--44. The recording and reproducing apparatus according to claim 43, wherein, in the second setting mode, the image information to be selectively and sequentially reproduced is the image information which is recognized as including the specific person before the recording of the image information by the recorder.

45. The recording and reproducing apparatus according to claim 43, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information having the predetermined condition including a relatively high importance level picked out from among the image information recorded in the recording medium which includes the registered specific person.

46. The recording and reproducing apparatus according to claim 43, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

47. The recording and reproducing apparatus according to claim 46, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.--

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UNITED STATES PATENT AND TRADEMARK OFFICE
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PATENT NO. : 10,176,848 C1

APPLICATION NO. : 90/014,641

ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 4, Line 65 to Column 5, Line 27, substitute claims 48, 49, 50, 51, 52, 53, and 54 with the following claims:

--48. The recording and reproducing apparatus of claim 43, further comprising a touch panel adhered to a screen of a display.

49. The recording and reproducing apparatus of claim 48, wherein the first setting mode and the second setting mode are each selected using the touch panel via a user interface.

50. The recording and reproducing apparatus according to claim 43, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

51. The recording and reproducing apparatus according to claim 43, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.

52. The recording and reproducing apparatus according to claim 43, wherein the recording and reproducing apparatus is a mobile phone.

53. The recording and reproducing apparatus according to claim 43, wherein the recording and reproducing apparatus is an electronic camera.

54. The recording and reproducing apparatus according to claim 43, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.--

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APPLICATION NO. : 90/014,641

ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 5, Lines 28 to 58, substitute claims 55, 56, 57, 58, and 59 with the following claims:

--55. The recording and reproducing apparatus according to claim 43, further comprising:
a video camera providing image data; and
a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

56. The recording and reproducing apparatus according to claim 55, wherein the frame is a rectangular frame.

57. The recording and reproducing apparatus according to claim 43, further comprising a display,
wherein the processing circuitry is further configured to generate a thumbnail corresponding to the recorded image such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.

58. The recording and reproducing apparatus according to claim 57, wherein the icon is displayed on the thumbnail.

59. The recording and reproducing apparatus according to claim 43, wherein the processing circuitry is further configured to:
capture video information corresponding to a scene;
automatically set a plurality of sections corresponding to the video information of the scene;
generate a plurality of thumbnails corresponding to the plurality of sections; and
display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.--

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PATENT NO. : 10,176,848 C1

APPLICATION NO. : 90/014,641

ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 5, Line 59 to Column 6, Line 24, substitute claims 60, 61, 62, 63, and 64 with the following claims:

--60. The recording and reproducing apparatus according to claim 59, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.

61. The recording and reproducing apparatus according to claim 43, further comprising a display,
wherein the display is configured to display a plurality of images,
wherein each image in the plurality of images includes a face of a different person, and
wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

62. The recording and reproducing apparatus according to claim 43, wherein the processing circuitry is further configured to execute the face-recognizing process on image information captured from an external camera not included in the recording and reproducing apparatus.

63. The recording and reproducing apparatus according to claim 43, further comprising:
an analog/digital converter, wherein the analog/digital converter is configured to convert analog image data corresponding to the captured photograph into a digital image signal; and
a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information,
wherein the encoded image information is stored in the memory.

64. The recording and reproducing apparatus according to claim 63, wherein the predetermined compression encoding method is an MPEG method.--

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PATENT NO. : 10,176,848 C1

APPLICATION NO. : 90/014,641

ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 6, Lines 25 to 54, substitute claim 65 with the following claim:

--65. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face;

register a person in the image information as a specific person, wherein an image information of a person with a face is obtained by newly photographing the person with a face in a photographing mode and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person;

firstly pick out an image information which includes the registered specific person,

secondly pick out an image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition,

wherein, when a registered specific person is recognized during a capture of additional image information, autofocus and autoexposure are adjusted for the additional image information of the registered specific person.--

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APPLICATION NO. : 90/014,641

ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 6, Line 55 to Column 7, Line 28, substitute claims 66, 67, 68, 69, and 70 with the following claims:

--66. The recording and reproducing apparatus according to claim 65, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

67. The recording and reproducing apparatus according to claim 65, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

68. The recording and reproducing apparatus of claim 65, further comprising a touch panel adhered to a screen of a display.

69. The recording and reproducing apparatus according to claim 65, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

70. The recording and reproducing apparatus according to claim 65, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.--

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APPLICATION NO. : 90/014,641

ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 7, Lines 29 to 59, substitute claims 71, 72, 73, 74, 75, and 76 with the following claims:

--71. The recording and reproducing apparatus according to claim 65, wherein the recording and reproducing apparatus is a mobile phone.

72. The recording and reproducing apparatus according to claim 65, wherein the recording and reproducing apparatus is an electronic camera.

73. The recording and reproducing apparatus according to claim 65, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.

74. The recording and reproducing apparatus according to claim 65, further comprising:

a video camera providing image data; and

a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

75. The recording and reproducing apparatus according to claim 74, wherein the frame is a rectangular frame.

76. The recording and reproducing apparatus according to claim 65, further comprising a display, wherein the processing circuitry is further configured to generate a thumbnail corresponding to the recorded image such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.--

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APPLICATION NO. : 90/014,641

ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 7, Line 60 to Column 8, Line 24, substitute claims 77, 78, 79, 80, and 81 with the following claims:

--77. The recording and reproducing apparatus according to claim 76, wherein the icon is displayed on the thumbnail.

78. The recording and reproducing apparatus according to claim 65, wherein the processing circuitry is further configured to:
capture video information corresponding to a scene;
automatically set a plurality of sections corresponding to the video information of the scene;
generate a plurality of thumbnails corresponding to the plurality of sections; and
display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.

79. The recording and reproducing apparatus according to claim 78, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.

80. The recording and reproducing apparatus according to claim 65, further comprising a display,
wherein the display is configured to display a plurality of images,
wherein each image in the plurality of images includes a face of a different person, and
wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

81. The recording and reproducing apparatus according to claim 65, wherein the processing circuitry is further configured to execute the face-recognizing process on image information captured from an external camera not included in the recording and reproducing apparatus.--

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APPLICATION NO.	:	90/014,641
ISSUE DATE	:	March 18, 2022
INVENTOR(S)	:	Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 8, Lines 25 to 36, substitute claims 82 and 83 with the following claims:

--82. The recording and reproducing apparatus according to claim 65, further comprising:

an analog/digital converter, wherein the analog/digital converter is configured to convert analog image data corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information.

83. The recording and reproducing apparatus according to claim 82, wherein the predetermined compression encoding method is an MPEG method.--

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APPLICATION NO. : 90/014,641

ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 8, Line 37 to Column 9, Line 12, substitute a portion of claim 84 with the following portion:

--84. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a processor;

a display displaying a first option and a second option, wherein when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information;

a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:

capture a photograph and generate image information of the photograph;

record the image information in a recording medium;

execute a face-recognizing process on the image information to recognize a face;

reproduce the recorded image from the recording medium;

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, an image information of a person with a face is obtained by newly photographing the person with a face in a photographing mode and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person, and, when the second setting mode is selected, a person with a face in an image information of a person with a face is selected from a plurality of faces in the image information recorded in the recording medium and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person;

selectively reproduce the recorded image which includes the registered specific person; and

generate a thumbnail corresponding to the recorded image in the recording medium such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface;

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PTO/SB/44 (09-07)
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UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 10,176,848 C1

APPLICATION NO. : 90/014,641

ISSUE DATE : March 18, 2022

INVENTOR(S) : Mari Yoshida

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

As presented in the EX PARTE REEXAMINATION CERTIFICATE issued March 18, 2022:

Column 9, Line 13 to Column 10, Line 23, substitute the remaining portion of claim 84 with the following portion:

a touch panel adhered to a screen of the display, wherein the first setting mode and the second setting mode are each selected using the touch panel;

a video camera providing video image data, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the video image data, the display displays the video image data with a frame surrounding at least a portion of the face of the person;

an analog/digital converter, wherein the analog/digital converter is configured to convert analog image data corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information, wherein the encoded image information is stored in the recording medium,

wherein the video camera captures video information corresponding to a scene and the processor:

automatically sets a plurality of sections corresponding to the video information of the scene; and

generates a plurality of thumbnails corresponding to the plurality of sections, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene, and the display displays the plurality of thumbnails; and

wherein the display is configured to display at least a plurality of images recorded in the recording medium such that contents of each image in the plurality of images includes a face of a different person and background objects and displaying the plurality of images includes displaying the faces without displaying all of the background objects included in the contents of each image of the plurality of images.--

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Electronic Acknowledgement Receipt

EFS ID:	45405388
Application Number:	90014641
International Application Number:	
Confirmation Number:	3601
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	10176848
Customer Number:	177632
Filer:	Scott M Kelly/Rachel Lichter
Filer Authorized By:	Scott M Kelly
Attorney Docket Number:	2638-19.06
Receipt Date:	06-APR-2022
Filing Date:	23-DEC-2020
Time Stamp:	09:53:32
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Certificate of Correction	Ex_A_-_Initialed_After-Final_Amendment_Cover_Page_21824930.PDF	52039 53791c2ded36322048835e04a5e99584cda27087	no	2

Warnings:

Information:					
2	Request for Certificate of Correction	Certificate_of_Correction_form_updated_version_21828581.pdf	124964 5af100b1b74ae24f9d8f0979ba0960b0f0bce4bb	no	18
Warnings:					
Information:					
3	Request for Certificate of Correction	Request_for_Certificate_Of_Correction_FINAL_21830577.pdf	28761 821e19faf6e74e220c5f414e2b049eeb482acc9b	no	4
Warnings:					
Information:					
			Total Files Size (in bytes):	205764	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reexamination of:

Mari Yoshida

Reexamination Control No. 90/014,641	Atty. Dkt. No. 009379.00008
Patent Under Reexamination: U.S. Pat. No. 10,176,848	Confirmation No.: 3601
Issue Date: March 18, 2022	Art Unit: 3992

Title: Recording and Reproducing Apparatus and Method Thereof

REQUEST FOR CERTIFICATE OF CORRECTION

Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box. 1450
Alexandria, VA 22313-1450

Commissioner:

Pursuant to 35 U.S.C. §§ 254 and 255 and 37 C.F.R. §§ 1.322 and 1.323, Patent Owner requests the issuance of a Certificate of Correction in the above-identified patent/reexamination. A completed PTO Form SB/44 is appended. The complete Certificate of Correction involves eighteen pages.

Except as noted, the corrected mistakes identified in the appended Form were incurred through the fault of the Office. Specifically, an incorrect listing of claims was published in the *ex parte* reexamination certificate (12015th) issued March 18, 2022. Other than claim 84 of the reexamination certificate, which corresponds to claim 101 added in the Amendment After Final dated December 21, 2021, the claims that were published appear to have been copied from the Amendment filed earlier on October 19, 2021. The Office, however, should have included all of

the claims from the most current listing of claims for publication, *i.e.*, the claims that were included in the Amendment After Final, dated December 21, 2021. The Amendment After Final was approved to be entered in the record by Examiner Peikari on January 21, 2022, as reflected by the Examiner-initialed cover page of the filing (Ex. A), but it appears that through an error of the Office only the cover page of the Amendment After Final was maintained in PAIR, and an incorrect earlier version of the claims was selected for publication from the October 19, 2021 filing. Examiner Peikari has acknowledged the presence of these errors via telephone communications and he indicated that a Certificate of Correction would be accepted to correct the errors.

The attached Certificate of Correction form sets forth the correct set of claims 21-84 added to the patent in the reexamination. For convenience, and for correspondence to the claims listing in the Amendment After Final, all of the added claims are listed. Claims 1-7, 9, 11, 12, 14, 16, 17, 19, and 20 remain unchanged from the original patent that issued on January 8, 2019.

In addition, with agreement from Examiner Peikari, Patent Owner takes this opportunity to correct the following minor typographical errors in claim 84, which have been also included on pages 17-18 of the appended PTO Form SB/44:

- Column 9, line 6 delete "information"
- Column 10, line 4 replace "memory" with "recording medium".

Issuance of a Certificate of Correction containing the corrections indicated in the attached Form SB/44 is respectfully requested. Authorization is hereby provided to charge the fee required under 37 C.F.R. § 1.20(a), or any other fee required, to our Deposit Account No. 19-0733.

Dated: April 6, 2022

Respectfully submitted,

By: /Scott M. Kelly/
Scott M. Kelly
Registration No.: 65,121

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and accurate copy of the REQUEST FOR CERTIFICATE OF CORRECTION filed in Reexamination Control Number 90/014,641 is being served in its entirety via First Class Mail, postage prepaid, on the following counsel of record:

Jennifer C. Bailey & Adam P. Seitz
ERISE IP, P.A.
7015 College Boulevard, Suite 700
Overland Park, Kansas 66211

on this April 6, 2022.

Respectfully submitted,

By: /Rachel Lichter/
Rachel Lichter

US010176848C1

(12) EX PARTE REEXAMINATION CERTIFICATE (12015th)
United States Patent
Yoshida

(10) Number: US 10,176,848 C1
(45) Certificate Issued: Mar. 18, 2022

(54) **RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF**

(71) Applicant: **Maxell, Ltd.**, Kyoto (JP)

(72) Inventor: **Mari Yoshida**, Yokohama (JP)

(73) Assignee: **Maxell, Ltd.**

Reexamination Request:
No. 90/014,641, Dec. 23, 2020

Reexamination Certificate for:
Patent No.: **10,176,848**
Issued: **Jan. 8, 2019**
Appl. No.: **14/478,020**
Filed: **Sep. 5, 2014**

Certificate of Correction issued Jul. 16, 2019

Related U.S. Application Data

(63) Continuation of application No. 12/430,185, filed on Apr. 27, 2009, now Pat. No. 9,159,368.

(30) **Foreign Application Priority Data**

May 19, 2008 (JP) 2008-130678

(51) **Int. Cl.**

G11B 27/34	(2006.01)
G11B 27/10	(2006.01)
H04N 21/434	(2011.01)
G06F 16/74	(2019.01)
G06F 16/73	(2019.01)
G06V 40/16	(2022.01)
G06V 20/40	(2022.01)
G06K 9/00	(2022.01)
G11B 27/034	(2006.01)
G11B 27/28	(2006.01)
G11B 27/30	(2006.01)
H04N 5/77	(2006.01)
H04N 5/781	(2006.01)
H04N 5/85	(2006.01)
H04N 9/804	(2006.01)

(52) **U.S. Cl.**
CPC ***G11B 27/34*** (2013.01); ***G06F 16/73*** (2019.01); ***G06F 16/745*** (2019.01); ***G06K 9/00*** (2013.01); ***G06V 20/40*** (2022.01); ***G06V 40/172*** (2022.01); ***G11B 27/034*** (2013.01); ***G11B 27/105*** (2013.01); ***G11B 27/28*** (2013.01); ***G11B 27/30*** (2013.01); ***H04N 5/77*** (2013.01); ***H04N 5/772*** (2013.01); ***H04N 5/781*** (2013.01); ***H04N 5/85*** (2013.01); ***H04N 9/8042*** (2013.01); *G11B 2220/455* (2013.01); *H04N 21/4347* (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

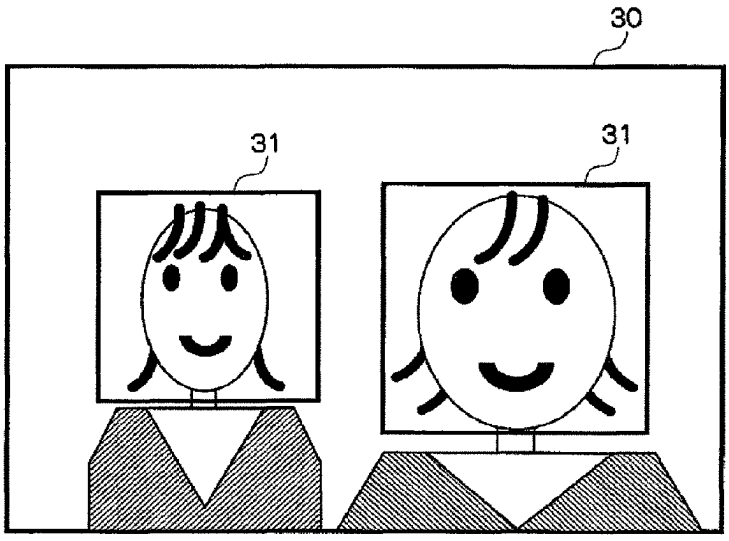
(56) **References Cited**

To view the complete listing of prior art documents cited during the proceeding for Reexamination Control Number 90/014,641, please refer to the USPTO's public Patent Application Information Retrieval (PAIR) system under the Display References tab.

Primary Examiner — B. James Peikari

(57) **ABSTRACT**

In a recording and reproducing apparatus and a recording and reproducing method for the recording and reproducing apparatus for recording and reproducing image information on a scene obtained through photographing, relative to a predetermined first recording medium and being capable of setting one or more chapters to each scene, a face recognizing process is executed for a photographed image based on the image information, an importance level of each chapter is set in accordance with a result of the face recognizing process for a very important person (VIP) set by a user, and each chapter having a relevant importance level among importance levels of respective chapters is selectively reproduced. A user can therefore find an object chapter and scene quickly and easily.



EX PARTE REEXAMINATION CERTIFICATE

THE PATENT IS HEREBY AMENDED AS INDICATED BELOW.

Matter enclosed in heavy brackets [ ] appeared in the patent, but has been deleted and is no longer a part of the patent; matter printed in italics indicates additions made to the patent.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **11**, **12**, **16**, **17**, **19** and **20** is confirmed.

Claims **8**, **10**, **13**, **15** and **18** are cancelled.

New claims **21-84** are added and determined to be patentable.

Claims **1-7**, **9** and **14** were not reexamined.

21. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a processor; and

a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:

capture a photograph and generate image information of the photograph;

record the image information in a recording medium;

execute a face-recognizing process on the image information to recognize a face;

reproduce the recorded image from the recording medium;

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person; and

selectively reproduce the recorded image information which includes the registered specific person,

wherein, in the first setting mode, the specific person is set before photographing the person with a face.

22. The recording and reproducing apparatus according to claim 21, wherein the image information to be selectively reproduced is the image information which is recognized as including the specific person before the recording of the image information.

23. The recording and reproducing apparatus according to claim 21, wherein the image information to be selectively reproduced is the image information having a relatively high importance level picked out among the image information recorded in the recording medium which includes the registered specific person.

24. The recording and reproducing apparatus according to claim 21, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

25. The recording and reproducing apparatus according to claim 24, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode,

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

26. The recording and reproducing apparatus according to claim 21, further comprising a touch panel adhered to a screen of a display.

27. The recording and reproducing apparatus according to claim 26, wherein the first setting mode and the second setting mode are each selected using the touch panel via a user interface.

28. The recording and reproducing apparatus according to claim 21, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

29. The recording and reproducing apparatus according to claim 21, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.

30. The recording and reproducing apparatus according to claim 21, wherein the recording and reproducing apparatus is a mobile phone.

31. The recording and reproducing apparatus according to claim 21, wherein the recording and reproducing apparatus is an electronic camera.

32. The recording and reproducing apparatus according to claim 21, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.

33. The recording and reproducing apparatus according to claim 21, further comprising

a video camera providing image data; and

a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

34. The recording and reproducing apparatus according to claim 33, wherein the frame is a rectangular frame.

35. The recording and reproducing apparatus according to claim 21, further comprising a display,

wherein the memory further stores instructions that, when executed by the processor, cause the processor to generate a thumbnail corresponding to the recorded image such that the thumbnail is displayed on the

display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.

36. The recording and reproducing apparatus according to claim 35, wherein the icon is displayed on the thumbnail.

37. The recording and reproducing apparatus according to claim 21, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

capture video information corresponding to a scene;

automatically set a plurality of sections corresponding to the video information of the scene:

generate a plurality of thumbnails corresponding to the plurality of sections; and

display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.

38. The recording and reproducing apparatus according to claim 37, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.

39. The recording and reproducing apparatus according to claim 21, further comprising a display,

wherein the display is configured to display a plurality of images,

wherein each image in the plurality of images includes a face of a different person, and

wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

40. The recording and reproducing apparatus according to claim 21, wherein the memory further stores instructions that, when executed by the processor, cause the processor to execute the face-recognizing process on image information captured from an external camera not included in the recording and reproducing apparatus.

41. The recording and reproducing apparatus according to claim 21, further comprising:

an analog/digital converter, wherein the analog/digital converter is configured to convert an analog image signal corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information,

wherein the encoded image information is stored in the memory.

42. The recording and reproducing apparatus according to claim 41, wherein the predetermined compression encoding method is an MPEG method.

43. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face,

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person,

firstly pick out image information which includes the registered specific person,

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition,

wherein, in the first setting mode, the specific person is set before photographing the person with a face.

44. The recording and reproducing apparatus according to claim 43, wherein the image information to be selectively and sequentially reproduced is the image information which is recognized as including the specific person before the recording of the image information by the recorder.

45. The recording and reproducing apparatus according to claim 43, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information having the predetermined condition including a relatively high importance level picked out from among the image information recorded in the recording medium which includes the registered specific person.

46. The recording and reproducing apparatus according to claim 43,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

47. The recording and reproducing apparatus according to claim 46,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

48. The recording and reproducing apparatus of claim 26, further comprising a touch panel adhered to a screen of a display.

49. The recording and reproducing apparatus of claim 48, wherein the first setting mode and the second setting mode are each selected using the touch panel via a user interface.

50. The recording and reproducing apparatus according to claim 43, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

51. The recording and reproducing apparatus according to claim 43, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.

52. The recording and reproducing apparatus according to claim 43, wherein the recording and reproducing apparatus is a mobile phone.

53. The recording and reproducing apparatus according to claim 43, wherein the recording and reproducing apparatus is an electronic camera.

54. The recording and reproducing apparatus according to claim 43, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.

55. The recording and reproducing apparatus according to claim 43, further comprising:

a video camera providing image data; and

a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

56. The recording and reproducing apparatus according to claim 55, wherein the frame is a rectangular frame.

57. The recording and reproducing apparatus according to claim 43, further comprising a display,

wherein the processing circuitry is further configured to generate a thumbnail corresponding to the recorded image such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.

58. The recording and reproducing apparatus according to claim 57, wherein the icon is displayed on the thumbnail.

59. The recording and reproducing apparatus according to claim 43, wherein the processing circuitry is further configured to:

capture video information corresponding to a scene;

automatically set a plurality of sections corresponding to the video information of the scene;

generate a plurality of thumbnails corresponding to the plurality of sections; and

display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.

60. The recording and reproducing apparatus according to claim 59, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.

61. The recording and reproducing apparatus according to claim 43, further comprising a display,

wherein the display is configured to display a plurality of images,

wherein each image in the plurality of images includes a face of a different person, and

wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

62. The recording and reproducing apparatus according to claim 43, wherein the processing circuitry is further configured to execute the face-recognizing process on image information captured from an external camera not included in the recording and reproducing apparatus.

63. The recording and reproducing apparatus according to claim 43, further comprising:

an analog/digital converter, wherein the analog/digital converter is configured to convert an analog image signal corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information,

wherein the encoded image information is stored in the memory.

64. The recording and reproducing apparatus according to claim 63, wherein the predetermined compression encoding method is an MPEG method.

65. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face;

register a person in the image information as a specific person, wherein a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person;

firstly pick out image information which includes the registered specific person,

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition,

wherein the specific person is set before photographing the person with a face.

66. The recording and reproducing apparatus according to claim 65,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under

the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

67. The recording and reproducing apparatus according to claim 65,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

68. The recording and reproducing apparatus of claim 65, further comprising a touch panel adhered to a screen of a display.

69. The recording and reproducing apparatus according to claim 65, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

70. The recording and reproducing apparatus according to claim 65, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.

71. The recording and reproducing apparatus according to claim 65, wherein the recording and reproducing apparatus is a mobile phone.

72. The recording and reproducing apparatus according to claim 65, wherein the recording and reproducing apparatus is an electronic camera.

73. The recording and reproducing apparatus according to claim 65, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.

74. The recording and reproducing apparatus according to claim 65, further comprising:

a video camera providing image data; and

a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

75. The recording and reproducing apparatus according to claim 74, wherein the frame is a rectangular frame.

76. The recording and reproducing apparatus according to claim 65, further comprising a display,

wherein the processing circuitry is further configured to generate a thumbnail corresponding to the recorded image such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.

77. The recording and reproducing apparatus according to claim 76, wherein the icon is displayed on the thumbnail.

78. The recording and reproducing apparatus according to claim 65, wherein the processing circuitry is further configured to:

capture video information corresponding to a scene;

automatically set a plurality of sections corresponding to the video information of the scene;

generate a plurality of thumbnails corresponding to the plurality of sections; and

display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.

79. The recording and reproducing apparatus according to claim 78, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.

80. The recording and reproducing apparatus according to claim 65, further comprising a display,

wherein the display is configured to display a plurality of images,

wherein each image in the plurality of images includes a face of a different person, and

wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

81. The recording and reproducing apparatus according to claim 65, wherein the processing circuitry is further configured to execute the face-recognizing process on image information captured from an external camera not included in the recording and reproducing apparatus.

82. The recording and reproducing apparatus according to claim 65, further comprising:

an analog/digital converter, wherein the analog/digital converter is configured to convert an analog image signal corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information.

83. The recording and reproducing apparatus according to claim 82, wherein the predetermined compression encoding method is an MPEG method.

84. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a processor;

a display displaying a first option and a second option, wherein when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information;

a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:

capture a photograph and generate image information of the photograph; record the image information in a recording medium;

execute a face-recognizing process on the image information to recognize a face;

reproduce the recorded image from the recording medium;

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, an image information of a person with a face is obtained by newly photographing the person with a face in a photographing mode and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person, and, when the second setting mode is selected, a person with a face in an image information of a person with a face is selected from

a plurality of faces in the image information recorded in the recording medium and, thereafter, the image information of the person with a face is used to register the person with a face as the specific person;

selectively reproduce the recorded image information which includes the registered specific person; and

generate a thumbnail corresponding to the recorded image in the recording medium such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface;

a touch panel adhered to a screen of the display, wherein the first setting mode and the second setting mode are each selected using the touch panel;

a video camera providing video image data, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the video image data, the display displays the video image data with a frame surrounding at least a portion of the face of the person;

an analog/digital converter, wherein the analog/digital converter is configured to convert analog image data corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information, wherein the encoded image information is stored in the memory,

wherein the video camera captures video information corresponding to a scene and the processor:

automatically sets a plurality of sections corresponding to the video information of the scene; and

generates a plurality of thumbnails corresponding to the plurality of sections, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene, and the display displays the plurality of thumbnails; and

wherein the display is configured to display at least a plurality of images recorded in the recording medium such that contents of each image in the plurality of images includes a face of a different person and background objects and displaying the plurality of images includes displaying the faces without displaying all of the background objects included in the contents of each image of the plurality of images.

* * * * *

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reexamination of:

Yoshida

Reexamination Control No. 90/014,641

Patent Under Reexamination: U.S. Pat. No. 10,176,848 Confirmation No.: 3601

Issue Date: January 8, 2019 Art Unit: 3992

Title: Recording and Reproducing Apparatus and Method Thereof Examiner: B. James Peikari

Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box. 1450
Alexandria, VA 22313-1450

COMMENTS ON STATEMENT OF REASONS FOR PATENTABILITY AND/OR CONFIRMATION

Patent Owner thanks the Examiner for the Notice of Intent to Issue *Ex Parte* Reexamination Certificate and Statement of Reasons for Patentability And/or Confirmation mailed on January 21, 2022, indicating that claims 11-12, 16-17, 19-33, and 51-101 are patentable/confirmed. Without withdrawing any of the patentable/confirmed claims from issue, Patent Owner submits these comments.

The Examiner made characterizations and assertions about the claims and the related prior art in the Notice of Intent to Issue *Ex Parte* Reexamination Certificate. Although Patent Owner agrees with the Examiner's ultimate conclusions that the claims are patentable because the prior art does not teach or suggest the claimed features set forth in the claims, Patent Owner

does not necessarily agree with each or every characterization and assertion contained in the Examiner's statement.

It is understood that the Examiner's characterizations were for purposes of referring to the prior art, and do not in any way imply that the claims are limited by words not actually present in the claims. There are many other features in the independent and dependent claims, and the features quoted in the excerpts are not necessarily the only reasons for distinguishing the claims from the various references. The claims, specification, and Patent Owner's arguments made during this proceeding are each clear, and Patent Owner does not acquiesce to any characterization thereof by the Examiner in the statement. For example, in the Notice of Intent to Issue *Ex Parte* Reexamination Certificate, the Examiner refers to several excerpts from the specification while describing the claims. *See* Notice of Intent to Issue *Ex Parte* Reexamination Certificate at 3. Such references to the specification should be interpreted to be exemplary in nature and Patent Owner asserts that the claim language and the claim language alone defines the scope of the claim, not the specification. Also, to the extent there is any deviation between the quoted excerpts and the language of the claims, the language of the claims will control. Therefore, unless expressly noted otherwise, Patent Owner declines to subscribe to any statement or characterization contained in the Notice of Intent to Issue *Ex Parte* Reexamination Certificate.

Moreover, Patent Owner notes that the Notice of Intent to Issue *Ex Parte* Reexamination Certificate does not apply the *Phillips v. AWH* claim construction standard but interprets claims under a different broadest reasonable interpretation standard. Thus, Patent Owner reserves all rights to set forth the proper construction under the *Phillips v. AWH* claim construction standard, where applicable.

The Examiner is thanked for his time and patience and Patent Owner agrees that claims 11-12, 16-17, 19-33, and 51-101 are patentable over the cited references.

If any questions remain, the Office is invited to contact the undersigned at (202)824-3158.

Dated: January 31, 2022

Respectfully submitted,

By: /Scott M Kelly/
Scott M. Kelly
Registration No. 65,121

BANNER & WITCOFF, LTD.
1100 13th St. NW
STE 1200
Washington, DC 20005
(202) 824-3000

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and accurate copy of the COMMENTS ON STATEMENT OF REASONS FOR PATENTABILITY AND/OR CONFIRMATION filed in Reexamination Control Number 90/014,641 is being served in its entirety via First Class Mail, postage prepaid, on the following counsel of record:

Jennifer C. Bailey & Adam P. Seitz
ERISE IP, P.A.
7015 College Boulevard, Suite 700
Overland Park, Kansas 66211

on this January 31, 2022.

Respectfully submitted,

By: /Rachel Lichter/
Rachel Lichter

Samsung - Exhibit 1004 - Page 48

Electronic Acknowledgement Receipt

EFS ID:	44880988
Application Number:	90014641
International Application Number:	
Confirmation Number:	3601
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	10176848
Customer Number:	177632
Filer:	Scott M Kelly/Rachel Lichter
Filer Authorized By:	Scott M Kelly
Attorney Docket Number:	2638-19.06
Receipt Date:	31-JAN-2022
Filing Date:	23-DEC-2020
Time Stamp:	16:46:32
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		848_Patent_-_Reexam_90014641-_Comments_on_RFAP_21716434.pdf	28053 c348598ab23aa7d651e956f9e515151b690372bb	yes	4

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Patent Owner Comments after Action Closing Prosecution	1	3
	Reexam Certificate of Service	4	4
Warnings:			
Information:			
	Total Files Size (in bytes):	28053	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/014,641	12/23/2020	10176848	2638-19.06	3601

177632 7590 01/21/2022

BANNER & WITCOFF, LTD.
1100 13th STREET, N.W.
SUITE 1200
WASHINGTON, DC 20005-4051

EXAMINER	
PEIKARI, BEHZAD	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
01/21/2022	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
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ERISE IP, P.A.
7015 COLLEGE BLVD., STE 700
OVERLAND PARK, KS 66211

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/014,641* .

PATENT UNDER REEXAMINATION *10176848* .

ART UNIT *3992* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Notice of Intent to Issue Ex Parte Reexamination Certificate	**Control No.** 90/014,641	**Patent Under Reexamination** 10176848	
	Examiner BEHZAD PEIKARI	**Art Unit** 3992	**AIA Status** No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☑ Prosecution on the merits is (or remains) closed in this *ex parte* reexamination proceeding. This proceeding is subject to reopening at the initiative of the Office or upon petition. *Cf.* 37 CFR 1.313(a). A Certificate will be issued in view of
   (a) ☑ Patent owner's communication(s) filed: 21 December 2021.
   (b) ☐ Patent owner's failure to file an appropriate timely response to the Office action mailed: _____.
   (c) ☐ Patent owner's failure to timely file an Appeal Brief (37 CFR 41.31).
   (d) ☐ The decision on appeal by the ☐ Board of Patent Appeals and Interferences ☐ Court dated _____
   (e) ☐ Other: _____.
2. The Reexamination Certificate will indicate the following:
   (a) Change in the Specification: ☐ Yes ☑ No
   (b) Change in the Drawing(s): ☐ Yes ☑ No
   (c) Status of the Claim(s):
      (1) Patent claim(s) confirmed: 11-12,16-17 and 19-20.
      (2) Patent claim(s) amended (including dependent on amended claim(s)): _____
      (3) Patent claim(s) canceled: 8,10,13,15 and 18.
      (4) Newly presented claim(s) patentable: 21-33 and 51-101.
      (5) Newly presented canceled claims: 34-50.
      (6) Patent claim(s) ☐ previously ☐ currently disclaimed: _____
      (7) Patent claim(s) not subject to reexamination: 1-7,9 and 14.
3. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
4. ☑ Note the attached statement of reasons for patentability and/or confirmation. Any comments considered necessary by patent owner regarding reasons for patentability and/or confirmation must be submitted promptly to avoid processing delays. Such submission(s) should be labeled: "Comments On Statement of Reasons for Patentability and/or Confirmation."
5. ☐ Note attached NOTICE OF REFERENCES CITED (PTO-892).
6. ☐ Note attached LIST OF REFERENCES CITED (PTO/SB/08 or PTO/SB/08 substitute).
7. ☐ The drawing correction request filed on _____ is: ☐approved ☐disapproved.
8. ☑ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☑ All b) ☐ Some* c) ☐None of the certified copies have
   ☐been received.
   ☐not been received.
   ☑been filed in Application No. 12/430,185.
   ☐been filed in reexamination Control No. _____.
   ☐been received by the International Bureau in PCT Application No. _____.

   * Certified copies not received: _____.
9. ☐ Note attached Examiner's Amendment.
10. ☑ Note attached Interview Summary (PTO-474).
11. ☐ Other: _____.

All correspondence relating to this reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of this Office action.

/B. JAMES PEIKARI/ Primary Examiner, Art Unit 3992	

cc: Requester (if third party requester)

This Notice of Intent to Issue a Reexamination Certificate concerns U.S. Patent Number 10,176,848 (the '848 patent).

The '848 patent matured from U.S. Patent Application No. 14/478,020 (the '020 application), which was a continuation of U.S. Patent Application No. 12/430,185 (the '185 application), now U.S. Patent Number 9,159,368.

For reasons explained below, the previous rejections35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, are hereby *withdrawn*. Thus, all there are no pending objections or rejections in this reexamination proceeding.

STATEMENT OF REASONS FOR PATENTABILITY AND/OR CONFIRMATION

The following is an examiner's statement of reasons for patentability and/or confirmation of the claims found patentable in this reexamination proceeding:

Claims 1-20 were original patent claims.

Claims 1-7, 9 and 14 were not subject to reexamination.

Claims 8, 10, 13, 15, and 18 have been canceled during this reexamination proceeding.

Claims 11, 12, 16, 17, 19 and 20 are *confirmed*.

Claims 21-33 and 51-101 are newly added during this reexamination proceeding and are *allowable*.

As stated in the final Office action mailed November 24, 2021, the arguments overcome the rejections of patent claims 11, 12, 16, 17, 19 and 20, since they point out that these claims are directed to reproducing modes as opposed to capture modes. While it may be argued that a reproducing mode could include capture, it is clear that claims 11, 12, 16, 17, 19 and 20 are directed to reproducing only (a position which is supported by the disclosure, note especially the descriptions of Figures 9 and 10 in the specification).

With regard to new claims 21-33 and 51-100, as stated in the final Office action mailed November 24, 2021, the examiner notes this passage from the '848 patent specification:

> "Further, since the video camera **60** registers a VIP in advance as described above, it is possible to avoid the following phenomenon. Namely, in performing autofocus and autoexposure utilizing face recognition, if the face of another person photographed together with a VIP is recognized by chance, the optimum focus and exposure are set to this other person, and the object VIP is not photographed well."

If this scenario is correct, then this would be an allowable feature of the invention and should incorporated into each of the new independent claims, as it would not only help to clarify the 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, issues noted above, but would also preempt prior art rejections should these issues be clarified by amendment.

In the proposed amendment provided during the interview of December 15, 2021, an amendment to claim 21 was suggested to include this allowable feature. In the amendment after final filed December 21, 2021, a modified, agreed-upon version of this feature was added to all of the new independent claims. Because of this

amendment, and other amendments, each of the previous rejections under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, have been overcome.

Further, with regard to the prior art, the final Office action mailed November 24, 2021 noted that the prior art combination of Gallagher and Nakashima does not teach that the photograph is taken first and then the specific person is "set", but that this feature may be obvious. However, the Gallagher and Nakashima combination does *not* teach or suggest:

> "Further, since the video camera **60** registers a VIP in advance as described above, it is possible to avoid the following phenomenon. Namely, in performing autofocus and autoexposure utilizing face recognition, if the face of another person photographed together with a VIP is recognized by chance, the optimum focus and exposure are set to this other person, and the object VIP is not photographed well."

This feature is described by the new claim language added to each of independent claims 21, 26 and 31, "wherein, when a registered specific person is recognized during a capture of additional image information, autofocus and autoexposure are adjusted for the additional image information of the registered specific person."

With regard to claim 101 submitted with the amendment after final filed December 21, 2021, this claim includes the limitations of independent claim 21 and dependent claims 52, 57, 58, 60, 62, 64, and 66, indicated allowable above, and would be allowable for similar reasons.

Consequently, claims 11, 12, 16, 17, 19 and 20 are *confirmed* and claims 21-33 and 51-101 are *allowable*.

Any comments considered necessary by PATENT OWNER regarding the above statement must be submitted promptly to avoid processing delays. Such submission by the patent owner should be labeled: "Comments on Statement of Reasons for Patentability and/or Confirmation" and will be placed in the reexamination file.

All correspondence relating to this *ex parte* reexamination proceeding should be directed:

By EFS: Registered users may submit via the electronic filing system EFS-web, at

https://efs.uspto.gov/efile/myportal/efs-registered

By Mail to: Mail Stop *Ex Parte* Reexam

Attn: Central Reexamination Unit
Commissioner of Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand to: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i) (C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely filed if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed:
/B. James Peikari/
Reexamination Specialist
Art Unit 3992

Conferees:

/C.M.T./
Reexamination Specialist, Art Unit 3992

/ALEXANDER J KOSOWSKI/
Supervisory Patent Examiner, Art Unit 3992

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/014,641	10176848
	Examiner	Art Unit
	BEHZAD PEIKARI	3992

CPC - Searched*		
Symbol	Date	Examiner

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Review of the prosecution history of U.S. Patent No. 10,176,848	01/23/2021	BJP
Updated review of the prosecution history of U.S. Patent No. 10,176,848	01/05/2022	BJP

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/B. JAMES PEIKARI/ Primary Examiner, Art Unit 3992	

Ex Parte Reexamination Interview Summary	Control No.	Patent Under Reexamination	
	90/014,641	10176848	
	Examiner	Art Unit	AIA (FITF) Status
	BEHZAD PEIKARI	3992	No

All participants (USPTO personnel, patent owner, patent owner's representative):

(1) [See Continuation Sheet]	(3) ____
(2) ____	(4) ____

Date of Interview: 15 December 2021

Type: a) ☐ Telephonic b) ☑ Video Conference
c) ☐ Personal (copy given to: 1) ☐ patent owner 2) ☐ patent owners representative)

Exhibit shown or demonstration conducted: d) ☑ Yes e) ☐ No.
If Yes, brief description: Interview Agenda [attached]

Agreement with respect to the claims f) ☑ was reached. g) ☐ was not reached. h) ☐ N/A.
Any other agreement(s) are set forth below under "Description of the general nature of what was agreed to..."

Claim(s) discussed: 11-12,16-17 and 19-101 .

Identification of prior art discussed: Gallagher, Nakashima .

Description of the general nature of what was agreed to if an agreement was reached, or any other comments: [See Continuation Sheet] .

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims patentable, if available, must be attached. Also, where no copy of the amendments that would render the claims patentable is available, a summary thereof must be attached.)

A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION MUST INCLUDE PATENT OWNER'S STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. (See MPEP § 2281). IF A RESPONSE TO THE LAST OFFICE ACTION HAS ALREADY BEEN FILED, THEN PATENT OWNER IS GIVEN **ONE MONTH** FROM THIS INTERVIEW DATE TO PROVIDE THE MANDATORY STATEMENT OF THE SUBSTANCE OF THE INTERVIEW
(37 CFR 1.560(b)). THE REQUIREMENT FOR PATENT OWNERS STATEMENT CAN NOT BE WAIVED.
EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).

/B. JAMES PEIKARI/ Primary Examiner, Art Unit 3992		

cc: Requester (if third party requester)

All participants (USPTO personnel, patent owner, patent owner's representative):

USPTO:
B. James Peikari (Primary Examiner)
Catherine M. Tarae (Primary Examiner)
Alexander Kosowski (SPE)

APPLICANT:
Christopher McKee (Reg. No. 32,384)
Bryan Nese (Reg. No. 66,023)
Saqib Siddiqui (Reg. No. 68,626)

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:

The examiner agreed that the proposed amendment to claim 21 (see the attached interview agenda) would overcome the respective rejection in the final Office action of November 24, 2021. Applicant agreed to incorporate similar language into the other independent claims.

Applicants also suggested making further amendments to overcome the remaining rejections. Applicants also asked for clarification on the status of claims 34-50.

Another call was made that afternoon and two the following day, including a discussion of claims 34-50.

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/014,641	10176848
	Examiner	Art Unit
	BEHZAD PEIKARI	3992

CPC						
Symbol					Type	Version
G11B	/	27	/	34	F	2013-01-01
G06F	/	16	/	745	I	2019-01-01
G06F	/	16	/	73	I	2019-01-01
G06V	/	40	/	172	I	2022-01-01
G06V	/	20	/	40	I	2022-01-01
G06K	/	9	/	00	I	2013-01-01
G11B	/	27	/	034	I	2013-01-01
G11B	/	27	/	105	I	2013-01-01
G11B	/	27	/	28	I	2013-01-01
G11B	/	27	/	30	I	2013-01-01
H04N	/	5	/	77	I	2013-01-01
H04N	/	5	/	772	I	2013-01-01
H04N	/	5	/	781	I	2013-01-01
H04N	/	5	/	85	I	2013-01-01
H04N	/	9	/	8042	I	2013-01-01
G11B	/	2220	/	455	A	2013-01-01
H04N	/	21	/	4347	A	2013-01-01

CPC Combination Sets							
Symbol					Type	Set	Ranking	Version
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	84	
/B. JAMES PEIKARI/ Primary Examiner, Art Unit 3992	05 January 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	21	4

U.S. Patent and Trademark Office

Part of Paper No.: 20220105

Samsung - Exhibit 1004 - Page 63

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/014,641	10176848
	Examiner	Art Unit
	BEHZAD PEIKARI	3992

INTERNATIONAL CLASSIFICATION				
CLAIMED				
G11B	/	27	/	34
G11B	/	27	/	10
H04N	/	21	/	434

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS
1	1

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE (Assistant Examiner) (Date)		Total Claims Allowed: 84	
/B. JAMES PEIKARI/ Primary Examiner, Art Unit 3992 (Primary Examiner)	05 January 2022 (Date)	O.G. Print Claim(s) 21	O.G. Print Figure 4

U.S. Patent and Trademark Office

Part of Paper No.: 20220105

Samsung - Exhibit 1004 - Page 64

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/014,641	10176848
	Examiner	**Art Unit**
	BEHZAD PEIKARI	3992

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	14	14	44	27	-	40	28	53	41	66	59	79	75	92
2	2	15	15	45	28	-	41	29	54	42	67	60	80	76	93
3	3	16	16	46	29	-	42	30	55	48	68	61	81	77	94
4	4	17	17	47	30	-	43	31	56	49	69	62	82	78	95
5	5	18	18	65	31	-	44	32	57	50	70	63	83	79	96
6	6	19	19	66	32	-	45	33	58	51	71	64	84	80	97
7	7	20	20	67	33	-	46	34	59	52	72	68	85	81	98
8	8	21	21	-	34	-	47	35	60	53	73	69	86	82	99
9	9	22	22	-	35	-	48	36	61	54	74	70	87	83	100
10	10	23	23	-	36	-	49	37	62	55	75	71	88	84	101
11	11	24	24	-	37	-	50	38	63	56	76	72	89		
12	12	25	25	-	38	26	51	39	64	57	77	73	90		
13	13	43	26	-	39	27	52	40	65	58	78	74	91		

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 84	
/B. JAMES PEIKARI/ Primary Examiner, Art Unit 3992 (Primary Examiner)	05 January 2022 (Date)	O.G. Print Claim(s) 21	O.G. Print Figure 4

U.S. Patent and Trademark Office

Part of Paper No.: 20220105

Samsung - Exhibit 1004 - Page 65

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/014,641	10176848
	Certificate Date	Certificate Number
		C1

Requester Correspondence Address: ☐ Patent Owner ☑ Third Party
ERISE IP, P.A. 7015 COLLEGE BLVD., STE 700 OVERLAND PARK, KS 66211

LITIGATION REVIEW ☑	BJP (examiner initials)	05 January 2022 (date)
Case Name		Director Initials
Maxell, Ltd. v. Apple Inc. (6:20cv646, Western District, TX) (Dismissed)		
US ITC Inv. No. 337-TA-1215 (as identified by requester) (Terminated)		

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	**NUMBER**
Inter Partes (now terminated)	IPR2021-00367

/B. JAMES PEIKARI/ Reexamination Specialist, CRU 3992	

-- NOT FOR ENTRY --

In re Reexamination of:

Yoshida

Reexamination Control No. 90/014,641

Patent Under Reexamination: U.S. Pat. No. 10,176,848

Issue Date: January 8, 2019 Art Unit: 3992

Title: Recording and Reproducing Apparatus and Method Thereof Examiner: B. James Peikari

AGENDA FOR EXAMINER INTERVIEW

Dear Primary Examiner Peikari:

Below is an agenda for the interview we have scheduled for Tuesday, October 5, at 1:00 p.m. ET.

Participants: Examiners B. James Peikari (lead) and Adam L. Basehoar (conferee); and attorneys Scott Kelly (Banner & Witcoff, Reg. No. 65,121), Bryan Nese (Mayer Brown, Reg. No. 66,023), and Saqib Siddiqui (Mayer Brown, Reg. No. 68,626).

Agenda:

1. **Discuss the rejection of the claims under 35 U.S.C. § 103 in the Non-Final Office Action mailed August 19, 2021**
    - Claims 8, 10-13, and 15-20 are subject to reexamination and stand rejected under pre-AIA 35 U.S.C. 103 as being unpatentable over U.S. Patent Application Publication No. 2007/0098303 ("Gallagher") in view of U.S. Patent Application Publication No. 2007/0019083 ("Nakahsima").

2. Discuss Distinguishing Features of Independent Claims 8, 13, and 18

- Neither Gallagher nor Nakashima (nor the two in combination) teach the claim limitation of "**wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person**," *e.g.*, a process of a registering a person via "newly photographing" that person.
- At best, the Gallagher-Nakashima combination merely teaches "manual" registration of individuals, requiring a user to manually input names, etc. for individuals that have already been photographed.
- The combination fails to teach the claimed feature of the "first setting mode" in the '848 Patent, whereby the act of newly photographing a person results in the registration of the person, in contrast to the "second setting mode," whereby the registration occurs by "select[ing] from a plurality of faces in the image information recorded in the recording medium."
- Put differently, the claimed "first setting mode" does not require the user to input names, etc. for the new image to be properly categorized as being the image of a specific person; it simply requires "newly photographing" that person, and then that image is thereby registered as being one containing the specific person. '848 Patent at 12:33-41; FIG. 13.
- For example, the registration of a specific person/VIP occurs "based upon the face recognizing process results," not based upon a user's entry of management information, such as via the input of a name or the selection of an existing photo of a VIP. *See id.* at 12:53-62. In one example of system in accordance with this feature of a "first setting mode," newly photographed images containing persons are automatically registered as containing specific persons. *See id.*
- Gallagher does not disclose or teach the claimed "first setting mode," as noted in the non-final Office Action. *See* Non-Final Action at 4 (stating that this limitation is "suggested, but not explicitly taught by Gallagher" and that "Gallagher suggests, but does not specifically mention allowing users to register a person's face using a newly captured image.").
- Nakashima does not teach the claimed "first setting mode" either. Nakashima merely discloses a way to ensure that users taking photos of a number of subjects can ensure that they are taking a relatively even number of photos of each subject. *See, e.g.*, Nakashima at ¶¶ [0006], [0008], [0057].
- Nakashima does not teach that registering facial images may be performed by individually photographing the face of a subject. Instead, Nakashima at best teaches that a user may "tag" a newly photographed image with the name of an individual (*i.e.*, manual registration). *Id.* at ¶ [0123] ("The photographer

photographs a subject at a size and clarity sufficient for identifying the face of the subject, and inputs the 'name' of the subject through the operation section 120" (emphasis added).), ¶ [0145] ("The subject management section 20*e* accepts input of 'names' of subjects through the graphical user interface (GUI), not shown, displayed on the liquid crystal panel 71" (emphasis added)).

- Similarly, paragraph [0147] of Nakashima merely explains that a user may "tag" photos that originate outside of Nakashima's camera. *Id.* at ¶ [0147] ("[F]acial images may be, for instance, received from an external server via the communication port 107 or read out from the memory card 200."). It does not teach the claimed "first setting mode."
- In sum, Gallagher is silent on the ability to register specific individuals by newly photographing the individual, and Nakashima merely teaches allowing users to manually input names of individuals in photographs that have already been taken. Thus, the combination of these references fails to teach or suggest the claimed feature of a "first setting mode" in which "a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person," as recited by independent claims 8, 13, and 18.

3. Discuss proposed new independent claim

- Solely to advance speedy issuance of a reexamination certificate and without agreeing to the allegations in the Office Action, Patent Owner proposes adding new independent claim 21. New independent claim 21 is similar to independent claim 8, with the added limitation of: "**wherein, in the first setting mode, the specific person is set before photographing the person with a face**."
- Support for the proposed added limitation of new claim 21 may be found in at least column 12, line 14, through column 13, line 32, and Figure 13. In particular, support is found in at least column 12, lines 22 through 25 and lines 36 through 38.
- New claim 21 is allowable for at least the reasons discussed above with respect to the independent claims under reexamination, as well as in view of the additional limitation.

4. Discuss distinguishing features of dependent claims 11, 12, 15, 16, 19, and 20

- Dependent claims 11, 12, 15, 16, 19, and 20 are directed to "reproduction" modes, not capture modes. For example, claim 11 recites "control the **reproduction of the image** information in a reproducing mode set from one of a **first reproducing mode** and a **second reproducing mode**, wherein a **reproducing time** required for reproducing the image information under the first reproducing mode is

shorter than a reproducing time required for reproducing the image information under the second reproducing mode" (emphasis added).

- At best, Nakashima discloses a variety of "capture modes," as applied by the Office Action at pp. 6-7:

> control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode (*Nakashima teaches a variety of camera modes and the ability to switch between them, note paragraphs [0079] and [0080], including self-timer, macro photography, flash photography, self photographing mode, automatic photography, manual photography, and zoom, which as described in paragraph [0090] uses aperture adjustment to drive the zoom lens*), the image information under the second reproducing mode (*for example, with the aperture adjustment taught above for Nakashima, using a high f/stop means that less light is entering the lens and therefore the shutter will need to stay open longer which means a slower shutter speed*), and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode (*again, with regard to the aperture adjustment in Nakashima, or virtually any camera, a higher f/stop means a smaller the opening in the lens, which means a greater depth of field, which means a sharper background, which means more information is required to store the image; as another example, using the timer mode would add to the amount of time required*).

- Capturing/recording pictures in various modes does not correspond to controlling reproducing modes and reproducing already recorded/captured modes with different reproducing times.

5. Discuss any suggestions by the examiners for advancing reexamination

We look forward to our discussion.

Scott M. Kelly
Reg. No. 65,121
Banner Witcoff
Tel: +1(202)824-3158

SET OF CLAIMS UNDER REEXAMINATION

The original claims subject to reexamination are reproduced below for the convenience of the examiners. If there are any differences between the claims below and the issued claims, the issued patent controls.

8. (Original) A recording and reproducing apparatus for recording and reproducing image information, comprising:

a processor; and

a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:

capture a photograph and generate image information of the photograph;

record the image information in a recording medium;

execute a face-recognizing process on the image information to recognize a face;

reproduce the recorded image from the recording medium;

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person; and

selectively reproduce the recorded image information which includes the registered specific person.

10. (Original) The recording and reproducing apparatus according to claim 8, wherein the image information to be selectively reproduced is the image information having a relatively high importance level picked out among the image information recorded in the recording medium which includes the registered specific person.

11. (Original) The recording and reproducing apparatus according to claim 8, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

12. (Original) The recording and reproducing apparatus according to claim 11, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode,

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

13. (Original) A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face,

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second

setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person,

firstly pick out image information which includes the registered specific person,

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition.

15. (Original) The recording and reproducing apparatus according to claim 13, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information having the predetermined condition including a relatively high importance level picked out from among the image information recorded in the recording medium which includes the registered specific person.

16. (Original) The recording and reproducing apparatus according to claim 13,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

17. (Original) The recording and reproducing apparatus according to claim 16,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the

predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

18. (Original) A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face;

register a person in the image information as a specific person, wherein a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person;

firstly pick out image information which includes the registered specific person,

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition.

19. (Original) The recording and reproducing apparatus according to claim 18,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the

predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

20. (Original) The recording and reproducing apparatus according to claim 19,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

PROPOSED NEW CLAIM FOR DISCUSSION

This proposed new claim is for discussion purposes only and is NOT FOR ENTRY.
For the convenience of the examiners, the proposed claim language is shown relative to the original language of issued claim 8.

21. (Newly Added) A recording and reproducing apparatus for recording and reproducing image information, comprising:

a processor; and

a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:

capture a photograph and generate image information of the photograph;

record the image information in a recording medium;

execute a face-recognizing process on the image information to recognize a face;

reproduce the recorded image from the recording medium;

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person; and

selectively reproduce the recorded image information which includes the registered specific person,

wherein, in the first setting mode, the specific person is set before photographing the person with a face.

OK TO ENTER
-- BJP 1/5/2022

(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reexamination of:

Yoshida

Reexamination Control No. 90/014,641

Patent Under Reexamination: U.S. Pat. No. 10,176,848	Confirmation No.: 3601
Issue Date: January 8, 2019	Art Unit: 3992
Title: Recording and Reproducing Apparatus and Method Thereof	Examiner: B. James Peikari

RESPONSE TO FINAL OFFICE ACTION

Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box. 1450
Alexandria, VA 22313-1450

Commissioner Faile,

Patent Owner respectfully submits this Response to the Final Office Action mailed November 24, 2021, regarding the above-captioned *Ex parte* Reexamination.

A **listing of claims and claim amendments** begin on page 2; and

Remarks begin on page 23.

The Commissioner is hereby authorized to charge any required fees or credit any overpayment of fees to Deposit Account No. 19-0733.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 3601

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
90/014,641	12/23/2020	386	3992	2638-19.06

APPLICANTS

INVENTORS

10176848, Residence Not Provided;
MAXELL, LTD PATENT OWNER, KYOTO, JAPAN;
APPLE INC (3RD. PTY. REQ.), CUPERTINO, CA;
ERISE IP P.A. (GENERAL), OVERLAND PARK, KS

**** CONTINUING DATA ***************************

This application is a REX of 14/478,020 09/05/2014 PAT 10176848 *
which is a CON of 12/430,185 04/27/2009 PAT 9159368
(*)Data provided by applicant is not consistent with PTO records.

**** FOREIGN APPLICATIONS ***************************

JAPAN 14/478,020 05/19/2008

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

Foreign Priority claimed ☑ Yes ☐ No 35 USC 119(a-d) conditions met ☑ Yes ☐ No Verified and Acknowledged /BEHZAD PEIKARI/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
				20	4

ADDRESS

BANNER & WITCOFF, LTD.
1100 13th STREET, N.W.
SUITE 1200
WASHINGTON, DC 20005-4051
UNITED STATES

TITLE

RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF

FILING FEE RECEIVED		
12600	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Electronic Acknowledgement Receipt

EFS ID:	44578434
Application Number:	90014641
International Application Number:	
Confirmation Number:	3601
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	10176848
Customer Number:	177632
Filer:	Scott M Kelly/Rachel Lichter
Filer Authorized By:	Scott M Kelly
Attorney Docket Number:	2638-19.06
Receipt Date:	21-DEC-2021
Filing Date:	23-DEC-2020
Time Stamp:	16:25:21
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		848_Patent_-_Reexam_90014641_-_Resp_to_2d_OA_-_Final_Draft_21653870.pdf	104328 59679dd9bb7b7fe4fd3007a210221a4194b61fdc	yes	29

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Reexam Response to Final Rejection	1	28
	Reexam Certificate of Service	29	29
Warnings:			
Information:			
	Total Files Size (in bytes):	104328	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/014,641	10176848
	Certificate Date	Certificate Number

Requester Correspondence Address: ☐ Patent Owner ☑ Third Party
ERISE IP, P.A. 7015 COLLEGE BLVD., STE 700 OVERLAND PARK, KS 66211

LITIGATION REVIEW ☑	BJP (examiner initials)	17 November 2021 (date)
Case Name		Director Initials
Maxell, Ltd. v. Apple Inc. (6:20cv646, Western District, TX) (Dismissed)		
US ITC Inv. No. 337-TA-1215 (as identified by requester) (Terminated)		

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	**NUMBER**
Inter Partes (now terminated)	IPR2021-00367

/B. JAMES PEIKARI/ Reexamination Specialist, CRU 3992	

Ex Parte Reexamination Interview Summary	Control No.	Patent Under Reexamination	
	90/014,641	10176848	
	Examiner	Art Unit	AIA (FITF) Status
	BEHZAD PEIKARI	3992	No

All participants (USPTO personnel, patent owner, patent owner's representative):

(1) [See Continuation Sheet]	(3) ____
(2) ____	(4) ____

Date of Interview: 05 October 2021

Type: a) ☐ Telephonic b) ☑ Video Conference
c) ☐ Personal (copy given to: 1) ☐ patent owner 2) ☐ patent owners representative)

Exhibit shown or demonstration conducted: d) ☑ Yes e) ☐ No.
If Yes, brief description: Interview Agenda [attached]

Agreement with respect to the claims f) ☐ was reached. g) ☑ was not reached. h) ☐ N/A.
Any other agreement(s) are set forth below under "Description of the general nature of what was agreed to..."

Claim(s) discussed: 8,10-13 and 15-20 .

Identification of prior art discussed: Gallagher, Nakashima .

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:
See Continuation Sheet .

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims patentable, if available, must be attached. Also, where no copy of the amendments that would render the claims patentable is available, a summary thereof must be attached.)

A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION MUST INCLUDE PATENT OWNER'S STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. (See MPEP § 2281). IF A RESPONSE TO THE LAST OFFICE ACTION HAS ALREADY BEEN FILED, THEN PATENT OWNER IS GIVEN **ONE MONTH** FROM THIS INTERVIEW DATE TO PROVIDE THE MANDATORY STATEMENT OF THE SUBSTANCE OF THE INTERVIEW
(37 CFR 1.560(b)). THE REQUIREMENT FOR PATENT OWNERS STATEMENT CAN NOT BE WAIVED.
EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).

/B. JAMES PEIKARI/ Primary Examiner, Art Unit 3992		

cc: Requester (if third party requester)

All participants (USPTO personnel, patent owner, patent owner's representative):

USPTO:
B. James Peikari (Primary Examiner)
Catherine M. Tarae (Primary Examiner)
Alexander Kosowski (SPE)

APPLICANT:
Scott Kelly (Reg. No. 65,121)
Bryan Nese (Reg. No. 66,023)
Saqib Siddiqui (Reg. No. 68,626)

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:

Applicants presented arguments that the patent claims were directed to reproducing image data rather than the capturing of image data as in the cited prior art.

Applicants suggested the new limitation "wherein, in the first setting mode, the specific person is set before photographing the person with a face" to further distinguish the claims.

The examiner agreed to fully consider these arguments if presented in a formal amendment. The examiner further agreed to alert applicants to any allowable subject matter in the disclosure.

-- NOT FOR ENTRY --

In re Reexamination of:

Yoshida

Reexamination Control No. 90/014,641

Patent Under Reexamination: U.S. Pat. No. 10,176,848

Issue Date: January 8, 2019 Art Unit: 3992

Title: Recording and Reproducing Apparatus and Method Thereof Examiner: B. James Peikari

AGENDA FOR EXAMINER INTERVIEW

Dear Primary Examiner Peikari:

Below is an agenda for the interview we have scheduled for Tuesday, October 5, at 1:00 p.m. ET.

Participants: Examiners B. James Peikari (lead) and Adam L. Basehoar (conferee); and attorneys Scott Kelly (Banner & Witcoff, Reg. No. 65,121), Bryan Nese (Mayer Brown, Reg. No. 66,023), and Saqib Siddiqui (Mayer Brown, Reg. No. 68,626).

Agenda:

1. **Discuss the rejection of the claims under 35 U.S.C. § 103 in the Non-Final Office Action mailed August 19, 2021**
    - Claims 8, 10-13, and 15-20 are subject to reexamination and stand rejected under pre-AIA 35 U.S.C. 103 as being unpatentable over U.S. Patent Application Publication No. 2007/0098303 ("Gallagher") in view of U.S. Patent Application Publication No. 2007/0019083 ("Nakahsima").

2. Discuss Distinguishing Features of Independent Claims 8, 13, and 18

- Neither Gallagher nor Nakashima (nor the two in combination) teach the claim limitation of "**wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person**," *e.g.*, a process of a registering a person via "newly photographing" that person.
- At best, the Gallagher-Nakashima combination merely teaches "manual" registration of individuals, requiring a user to manually input names, etc. for individuals that have already been photographed.
- The combination fails to teach the claimed feature of the "first setting mode" in the '848 Patent, whereby the act of newly photographing a person results in the registration of the person, in contrast to the "second setting mode," whereby the registration occurs by "select[ing] from a plurality of faces in the image information recorded in the recording medium."
- Put differently, the claimed "first setting mode" does not require the user to input names, etc. for the new image to be properly categorized as being the image of a specific person; it simply requires "newly photographing" that person, and then that image is thereby registered as being one containing the specific person. '848 Patent at 12:33-41; FIG. 13.
- For example, the registration of a specific person/VIP occurs "based upon the face recognizing process results," not based upon a user's entry of management information, such as via the input of a name or the selection of an existing photo of a VIP. *See id.* at 12:53-62. In one example of system in accordance with this feature of a "first setting mode," newly photographed images containing persons are automatically registered as containing specific persons. *See id.*
- Gallagher does not disclose or teach the claimed "first setting mode," as noted in the non-final Office Action. *See* Non-Final Action at 4 (stating that this limitation is "suggested, but not explicitly taught by Gallagher" and that "Gallagher suggests, but does not specifically mention allowing users to register a person's face using a newly captured image.").
- Nakashima does not teach the claimed "first setting mode" either. Nakashima merely discloses a way to ensure that users taking photos of a number of subjects can ensure that they are taking a relatively even number of photos of each subject. *See, e.g.*, Nakashima at ¶¶ [0006], [0008], [0057].
- Nakashima does not teach that registering facial images may be performed by individually photographing the face of a subject. Instead, Nakashima at best teaches that a user may "tag" a newly photographed image with the name of an individual (*i.e.*, manual registration). *Id.* at ¶ [0123] ("The photographer

photographs a subject at a size and clarity sufficient for identifying the face of the subject, and inputs the 'name' of the subject through the operation section 120" (emphasis added).), ¶ [0145] ("The subject management section 20*e* accepts input of 'names' of subjects through the graphical user interface (GUI), not shown, displayed on the liquid crystal panel 71" (emphasis added)).

- Similarly, paragraph [0147] of Nakashima merely explains that a user may "tag" photos that originate outside of Nakashima's camera. *Id.* at ¶ [0147] ("[F]acial images may be, for instance, received from an external server via the communication port 107 or read out from the memory card 200."). It does not teach the claimed "first setting mode."
- In sum, Gallagher is silent on the ability to register specific individuals by newly photographing the individual, and Nakashima merely teaches allowing users to manually input names of individuals in photographs that have already been taken. Thus, the combination of these references fails to teach or suggest the claimed feature of a "first setting mode" in which "a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person," as recited by independent claims 8, 13, and 18.

3. Discuss proposed new independent claim

- Solely to advance speedy issuance of a reexamination certificate and without agreeing to the allegations in the Office Action, Patent Owner proposes adding new independent claim 21. New independent claim 21 is similar to independent claim 8, with the added limitation of: "**wherein, in the first setting mode, the specific person is set before photographing the person with a face**."
- Support for the proposed added limitation of new claim 21 may be found in at least column 12, line 14, through column 13, line 32, and Figure 13. In particular, support is found in at least column 12, lines 22 through 25 and lines 36 through 38.
- New claim 21 is allowable for at least the reasons discussed above with respect to the independent claims under reexamination, as well as in view of the additional limitation.

4. Discuss distinguishing features of dependent claims 11, 12, 15, 16, 19, and 20

- Dependent claims 11, 12, 15, 16, 19, and 20 are directed to "reproduction" modes, not capture modes. For example, claim 11 recites "control the **reproduction of the image** information in a reproducing mode set from one of a **first reproducing mode** and a **second reproducing mode**, wherein a **reproducing time** required for reproducing the image information under the first reproducing mode is

shorter than a reproducing time required for reproducing the image information under the second reproducing mode" (emphasis added).

- At best, Nakashima discloses a variety of "capture modes," as applied by the Office Action at pp. 6-7:

> control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode (*Nakashima teaches a variety of camera modes and the ability to switch between them, note paragraphs [0079] and [0080], including self-timer, macro photography, flash photography, self photographing mode, automatic photography, manual photography, and zoom, which as described in paragraph [0090] uses aperture adjustment to drive the zoom lens*), the image information under the second reproducing mode (*for example, with the aperture adjustment taught above for Nakashima, using a high f/stop means that less light is entering the lens and therefore the shutter will need to stay open longer which means a slower shutter speed*), and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode (*again, with regard to the aperture adjustment in Nakashima, or virtually any camera, a higher f/stop means a smaller the opening in the lens, which means a greater depth of field, which means a sharper background, which means more information is required to store the image; as another example, using the timer mode would add to the amount of time required*).

- Capturing/recording pictures in various modes does not correspond to controlling reproducing modes and reproducing already recorded/captured modes with different reproducing times.

5. Discuss any suggestions by the examiners for advancing reexamination

We look forward to our discussion.

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SET OF CLAIMS UNDER REEXAMINATION

The original claims subject to reexamination are reproduced below for the convenience of the examiners. If there are any differences between the claims below and the issued claims, the issued patent controls.

8. (Original) A recording and reproducing apparatus for recording and reproducing image information, comprising:

a processor; and

a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:

capture a photograph and generate image information of the photograph;

record the image information in a recording medium;

execute a face-recognizing process on the image information to recognize a face;

reproduce the recorded image from the recording medium;

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person; and

selectively reproduce the recorded image information which includes the registered specific person.

10. (Original) The recording and reproducing apparatus according to claim 8, wherein the image information to be selectively reproduced is the image information having a relatively high importance level picked out among the image information recorded in the recording medium which includes the registered specific person.

11. (Original) The recording and reproducing apparatus according to claim 8, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

12. (Original) The recording and reproducing apparatus according to claim 11, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode,

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

13. (Original) A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face,

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second

setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person,

firstly pick out image information which includes the registered specific person,

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition.

15. (Original) The recording and reproducing apparatus according to claim 13, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information having the predetermined condition including a relatively high importance level picked out from among the image information recorded in the recording medium which includes the registered specific person.

16. (Original) The recording and reproducing apparatus according to claim 13,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

17. (Original) The recording and reproducing apparatus according to claim 16,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the

predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

18. (Original) A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face;

register a person in the image information as a specific person, wherein a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person;

firstly pick out image information which includes the registered specific person,

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition.

19. (Original) The recording and reproducing apparatus according to claim 18,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the

predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

20. (Original) The recording and reproducing apparatus according to claim 19,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

PROPOSED NEW CLAIM FOR DISCUSSION

This proposed new claim is for discussion purposes only and is NOT FOR ENTRY.
For the convenience of the examiners, the proposed claim language is shown relative to the original language of issued claim 8.

21. (Newly Added) A recording and reproducing apparatus for recording and reproducing image information, comprising:

a processor; and

a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:

capture a photograph and generate image information of the photograph;

record the image information in a recording medium;

execute a face-recognizing process on the image information to recognize a face;

reproduce the recorded image from the recording medium;

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person; and

selectively reproduce the recorded image information which includes the registered specific person,

wherein, in the first setting mode, the specific person is set before photographing the person with a face.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/014,641	12/23/2020	10176848	2638-19.06	3601

177632 7590 11/24/2021

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ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
11/24/2021	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/014,641* .

PATENT UNDER REEXAMINATION *10176848* .

ART UNIT *3992* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

DETAILED ACTION

Ex Parte Reexamination

In this *ex parte* reexamination proceeding:

Claims 8, 10-13, and 15-20 of U.S. Patent Number 10,176,848 (the '848 patent) are subject to reexamination.

Claims 8, 10, 13, 15 and 18 have been canceled.

New claims 21-100 have been added.

Prosecution Summary

The following is a brief summary of the prosecution to date in this *ex parte* reexamination proceeding:

- On December 23, 2020, a request for *ex parte* reexamination of claims 8, 10-13, and 15-20 of the '848 patent was filed by a third party requestor.
- On January 29, 2021, the USPTO mailed a decision granting *ex parte* reexamination and ordering the reexamination of claims 8, 10-13, and 15-20.
- On August 19, 2021, the USPTO mailed a non-final Office action, wherein claims 8, 10-13, and 15-20 were rejected.
- On November 18, 2020, an amendment was filed, wherein claims 8, 10, 13, 15 and 18 were canceled and new claims 21-100 were added.

References

The references discussed herein are as follows:

(1) U.S. Patent Application No. 2007/0098303 to Gallagher et al. ("Gallagher").

(2) U.S. Patent Application No. 2007/0019083 to Nakashima ("Nakashima").

Note: A declaration by Dr. Charles D. Creusere has been considered.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21-33 and 51-100 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C. 112, the applicant), regards as the invention.

- In claim 21, line 12, the language, "a person with a face" is unclear in this context. This could be corrected with the language "an image of a person with a face" or "image information of a person with a face".
- In claim 21, line 12, the language, "is obtained" is unclear. In the context of the claim, there are several possible meanings, and it is important to make clear which meaning is intended, since certain meanings may represent allowable subject matter while others may not. For example,

with regard to "is obtained", is this supposed to mean "is recognized to match a specific person"? Or does it mean "is recognized to not match any previously registered persons"? Or, assuming the language is corrected to "an image of a person with a face" or "image information of a person with a face", then "obtained" would simply mean "obtained" and be correct in this context.

- In claim 21, line 13, the scope of "and thereafter registered" would be unclear in the context of the changes required above. It is assumed that the antecedent basis is meant to be "a person with a face".

Note: The following language is suggested to overcome the above rejections: "image information of a person with a face is obtained by newly photographing the person with a face in a photographing mode and, thereafter, the image information of a person with a face is used to register the person with a face as the specific person..." This language, while seemingly repetitive, will avoid antecedent basis problems with "image information" and "a person" as used earlier in the claim.

- In claim 21, lines 19 and 20, it is not clear whether the "wherein" clause is meant to be under the umbrella of "cause the processor to" or whether it is done independently (this matters because it would determine whether the step is performed automatically or manually).
- In claim 21, line 19, the scope of "the specific person is set" is unclear in this context.

- With regard to claim 22, while it is clear how this will be possible in the second setting mode of claim 21, it is not clear how it would be possible in the first setting mode.
- The remainder of claims 22-33 and 51-100 either include similar features or are dependent upon parent claims that include similar features to those rejected above, and are rejected for similar reasons.

Claim Rejections - 35 USC § 103

The previous rejections of claims 8, 10, 13, 15 and 18 are withdrawn, due to the cancellation of these claims by the amendment of October 19, 2021.

The previous rejections of claims 11, 12, 16, 17, 19 and 20 are withdrawn, due to the arguments submitted with the amendment of October 19, 2021.

Response to Arguments

The amendments and associated arguments filed October 19, 2021 have been fully considered.

The arguments overcome the rejections of claims 11, 12, 16, 17, 19 and 20, since they point out that these claims are directed to reproducing modes as opposed to capture modes. While it may be argued that a reproducing mode could include capture, it is clear that claims 11, 12, 16, 17, 19 and 20 are directed to reproducing only (a position which is supported by the disclosure, note especially the descriptions of Figures 9 and 10 in the specification). Thus, claims 11, 12, 16, 17, 19 and 20 are confirmed.

The amendment overcomes the rejections of claims 8, 10, 13, 15 and 18, inasmuch as these claims have been canceled.

The amendment does require rejections of new claims 21-33 and 51-100, for the reasons described in the above rejections.

Note also: no new prior art rejections have been made with this Office action. However, upon clarification of the claims (as required by the rejection) new prior art rejections may be necessary, depending on the meaning/interpretation of the limitations noted in the rejections under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph.

The arguments filed October 19, 2021 describe what appears to be allowable subject matter in claims 21-33 and 51-100. However, these arguments are either not adequately reflected in the claims or do not find support in the disclosure.

For example, page 27 of the arguments states:

"Neither Gallagher nor Nakashima (nor the two in combination) teach the claim limitation of 'wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person,' e.g., a process of a registering a person via 'newly photographing' that person.

At best, the Gallagher-Nakashima combination merely teaches 'manual' registration of individuals, requiring a user to manually input names, etc. for individuals that have already been photographed. The combination fails to teach the claimed feature of the 'first setting mode' in the '848 Patent, whereby the act of newly photographing a person results in the registration of the person"

While this may indicate allowable subject matter, in the disclosure "registering" is always associated with selecting VIP, a process which is done manually by a user:

"A user can select a VIP from the face images **41** of persons displayed on the VIP deciding screen **40**. A plurality of VIP's may be selected. Faces of objects having a high appearance frequency such as family members may be registered beforehand"

and

"the user depresses a "decide" button **42** to register the selected person as a VIP."

The arguments filed October 19, 2021 argue that the invention is distinct from the prior art because of the new limitation "wherein, in the first setting mode, the specific person is set before photographing the person with a face."

First, as noted in the rejections above, the limitation "the specific person is set" is not clear.

Second, applicant has explained that a difference between the invention and the prior art is that in the invention "the specific person is set" prior to taking the photograph, whereas in the prior art combination of Gallagher and Nakashima, the photograph is taken first and then the specific person is "set." While these approaches may be different, applicant has not explained why it would have been *unobvious* to "set" the specific person prior to taking the photograph vs taking the photograph first.

During the interview of October 5, 2021, the examiner agreed to alert applicant to any allowable subject matter. In response to this agreement (and as a possible answer to the obviousness question above), the examiner notes this passage from the specification:

"Further, since the video camera **60** registers a VIP in advance as described above, it is possible to avoid the following phenomenon. Namely, in performing autofocus and autoexposure utilizing face recognition, if the face of another person photographed together with a VIP is recognized by chance, the optimum focus and exposure are set to this other person, and the object VIP is not photographed well."

If this scenario is correct, then this would be an allowable feature of the invention and should incorporated into each of the new independent claims, as it would not only help to clarify the 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, issues noted above, but would also preempt prior art rejections should these issues be clarified by amendment. Language such as "wherein when a registered specific person is recognized during a capture of image information, autofocus and autoexposure are adjusted to be optimized for the registered specific person" could be used.

Examiner's Statement of Reasons for Patentability/Confirmation

None of the claims subject to reexamination have been confirmed at this time.

Conclusion

For the reasons described above, each of claims 21-33 and 51-100 is rejected. Claims 11, 12, 16, 17, 19 and 20 are confirmed.

Patent owner's amendment filed October 19, 2021 necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

A shortened statutory period for response to this action is set to expire 2 months from the mailing date of this action.

Extensions of time under 37 CFR 1.136(a) do not apply in reexamination proceedings. The provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Further, in 35 U.S.C. 305 and in 37 CFR

1.550(a), it is required that reexamination proceedings "will be conducted with special dispatch within the Office."

Extensions of time in reexamination proceedings are provided for in 37 CFR 1.550(c). A request for extension of time must specify the requested period of extension and it must be accompanied by the petition fee set forth in 37 CFR 1.17(g). Any request for an extension in a third party requested ex parte reexamination must be filed on or before the day on which action by the patent owner is due, and the mere filing of a request will not effect any extension of time. A request for an extension of time in a third party requested ex parte reexamination will be granted only for sufficient cause, and for a reasonable time specified. Any request for extension in a patent owner requested ex parte reexamination (including reexamination ordered under 35 U.S.C. 257) for up to two months from the time period set in the Office action must be filed no later than two months from the expiration of the time period set in the Office action. A request for an extension in a patent owner requested ex parte reexamination for more than two months from the time period set in the Office action must be filed on or before the day on which action by the patent owner is due, and the mere filing of a request for an extension for more than two months will not effect the extension. The time for taking action in a patent owner requested ex parte reexamination will not be extended for more than two months from the time period set in the Office action in the absence of sufficient cause or for more than a reasonable time.

The filing of a timely first response to this final rejection will be construed as including a request to extend the shortened statutory period for an additional two

months. In no event, however, will the statutory period for response expire later than SIX MONTHS from the mailing date of the final action. See MPEP § 2265.

Amendment in Reexamination Proceedings

Patent Owner is notified that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 CFR 1.530(d)-(j), must be formally presented pursuant to 37 CFR 1.52(a) and (b), and must contain any fees required by 37 CFR 1.20(c).

In order to ensure full consideration of any amendments, affidavits or declarations, or other documents as evidence of patentability, such documents must be submitted in response to this Office action. Submissions will be governed by the requirements of 37 CFR 1.116, after final rejection and 37 CFR 41.33 after appeal, which will be strictly enforced. See MPEP § 2250(IV) for examples to assist in the preparation of proper proposed amendments in reexamination proceedings.

Service of Papers

After filing of a request for ex parte reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requester proceedings are merged) in the reexamination proceeding in the manner provided in 37 CFR 1.248. The document must reflect service or the document may be refused consideration by the Office. See 37 CFR 1.550(f).

Extensions of Time

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Litigation Reminder

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the patent throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

All correspondence relating to this *Ex Parte* reexamination proceeding should be directed:

By EFS: Registered users may submit via the electronic filing system EFS-web, at

https://efs.uspto.gov/efile/myportal/efs-registered

By Mail to: Mail Stop *Ex Parte* Reexam

Attn: Central Reexamination Unit
Commissioner of Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand to: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i) (C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely filed if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed:

/B. James Peikari/
Primary Examiner
Central Reexamination Unit 3992

/ALEXANDER J KOSOWSKI/
Supervisory Patent Examiner, Art Unit 3992

Conferees:

/C.M.T./
Primary Examiner, Art Unit 3992

Office Action in Ex Parte Reexamination	**Control No.** 90/014,641	**Patent Under Reexamination** 10176848	
	Examiner BEHZAD PEIKARI	**Art Unit** 3992	**AIA (FITF) Status** No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

a. ☑ Responsive to the communication(s) filed on 19 October 2021.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

b. ☑ This action is made FINAL.

c. ☐ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire 2 month(s) from the mailing date of this letter. Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).** If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☐ Information Disclosure Statement, PTO/SB/08.
3. ☑ Interview Summary, PTO-474.
4. ☐ _____.

Part II SUMMARY OF ACTION

1a. ☑ Claims 8,10-13 and 15-100 are subject to reexamination.

1b. ☑ Claims 1-7,9 and 14 are not subject to reexamination.

2. ☑ Claims 8,10,13,15 and 18 have been canceled in the present reexamination proceeding.

3. ☑ Claims 11-12,16-17 and 19-20 are patentable and/or confirmed.

4. ☑ Claims 21-33 and 51-100 are rejected.

5. ☐ Claims _____ are objected to.

6. ☐ The drawings, filed on _____ are acceptable.

7. ☐ The proposed drawing correction, filed on _____ has been (7a) ☐ approved (7b) ☐ disapproved.

8. ☑ Acknowledgment is made of the priority claim under 35 U.S.C. 119(a)-(d) or (f).

   a) ☑ All b) ☐ Some* c) ☐ None of the certified copies have

   1 ☐ been received.

   2 ☐ not been received.

   3 ☑ been filed in Application No. 12/430,185.

   4 ☐ been filed in reexamination Control No. _____.

   5 ☐ been received by the International Bureau in PCT application No. _____.

   * See the attached detailed Office action for a list of the certified copies not received.

9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.

10. ☐ Other: _____

cc: Requester (if third party requester)

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 90/014,641	Filing Date 12/23/2020	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	10/19/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 95	Minus	** 20	= 75		x $100 =	7500
	Independent (37 CFR 1.16(h))	* 4	Minus	*** 4	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	7500

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/PATRICIA F LEWIS/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and accurate copy of the RESPONSE TO NON-FINAL OFFICE ACTION filed in Reexamination Control Number 90/014,641 is being served in its entirety via First Class Mail, postage prepaid, on the following counsel of record:

Jennifer C. Bailey & Adam P. Seitz
ERISE IP, P.A.
7015 College Boulevard, Suite 700
Overland Park, Kansas 66211

on this October 19, 2021.

Respectfully submitted,

By: /Rachel Lichter/
Rachel Lichter

Electronic Patent Application Fee Transmittal

Application Number:	90014641
Filing Date:	23-Dec-2020
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	10176848
Filer:	Scott M Kelly/Rachel Lichter
Attorney Docket Number:	2638-19.06

Filed as Large Entity

Filing Fees for ex parte reexam

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
REEXAMINATION CLAIMS IN EXCESS OF 20	1822	75	100	7500
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**7500**

Electronic Acknowledgement Receipt

EFS ID:	44067754
Application Number:	90014641
International Application Number:	
Confirmation Number:	3601
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	10176848
Customer Number:	177632
Filer:	Scott M Kelly/Rachel Lichter
Filer Authorized By:	Scott M Kelly
Attorney Docket Number:	2638-19.06
Receipt Date:	19-OCT-2021
Filing Date:	23-DEC-2020
Time Stamp:	15:45:45
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$7500
RAM confirmation Number	E20210IF46220134
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		848_Patent_-_Reexam_90014641_-_Response_to_1st_OA_-_BW_009379_21534031.pdf	107973 331fdf1aad6a9745bde7d6ff9b94032fe7924147	yes	31

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Response after non-final action-owner timely	1	30
	Reexam Certificate of Service	31	31

Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37604 820d014b1faf4514ab5c7abe5349b1edca309afa	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	145577		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

BW Ref. 009379.00008
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reexamination of:

Yoshida

Reexamination Control No. 90/014,641

Patent Under Reexamination: U.S. Pat. No. 10,176,848 Confirmation No.: 3601

Issue Date: January 8, 2019 Art Unit: 3992

Title: Recording and Reproducing Apparatus and Method Thereof Examiner: B. James Peikari

RESPONSE TO NON-FINAL OFFICE ACTION

Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box. 1450
Alexandria, VA 22313-1450

Commissioner Faile,

Patent Owner respectfully submits this Response to the non-final Office Action mailed August 19, 2021, regarding the above-captioned *Ex parte* Reexamination.

A **listing of claims and claim amendments** begin on page 2; and

Remarks begin on page 22.

The Commissioner is hereby authorized to charge any required fees or credit any overpayment of fees to Deposit Account No. 19-0733.

LISTING OF CLAIMS

This listing of claims will replace all prior versions and listings of claims. The following amendments are not to be construed as admissions regarding the patentability of the claimed subject matter.

1. (Original) A recording and reproducing apparatus for recording and reproducing video information, comprising:

a photographing unit for photographing an object and for generating video information;

a recording unit for recording the video information having been generated by the photographing unit into a recording medium;

a face-recognition processing unit executing a face-recognizing process on the video information to recognize a face;

a reproducing unit for reproducing the video information having been recorded by the recording unit from the recording medium;

a specific person setting unit setting one of a first setting mode and a second setting mode and executing a process of specifying a person with a face according to the set one of the first setting mode and the second setting mode,

wherein, when the first setting mode is set, a person is specified with a face recognized by the face-recognition processing unit after the first setting mode is set and before the recording of the video information by the recording unit, and, when the second setting mode is set, a person is specified with a face in the video information in the recording medium that has previously been recorded and previously recognized by the face-recognition processing unit before the specific person setting unit sets the first setting mode or the second setting mode; and

a control unit for controlling the reproducing unit so as to selectively reproduce the video information from the recording medium which includes the specific person set by the specific person setting unit according to a result of the face-recognition processing unit.

2. (Original) The recording and reproducing apparatus according to claim 1, further comprising:

a user interface unit by which a user selects one of operation modes including:

(1) a specific person setting mode having the first setting mode and the second setting mode,

(2) a recording mode in which the video information generated by the photographing unit are recorded in the recording medium, and

(3) a reproducing mode in which the video information is to be reproduced by the reproducing unit,

wherein the control unit controls the recording and reproducing apparatus according to the mode selected by the user interface unit.

3. (Original) The recording and reproducing apparatus according to claim 2, wherein the specific person setting mode is configured to specify one or more persons, and the control unit is configured to control the reproducing unit so as to reproduce the video information of the specified one or more persons.

4. (Original) The recording and reproducing apparatus according to claim 2, further comprising:

a displaying unit for displaying information of a face to which the face-recognizing processing has been conducted, in case that the recording mode is selected by the user interface.

5. (Original) The recording and reproducing apparatus according to claim 2, wherein the reproducing mode selected by the user interface is for reproducing the video information of the specific person specified by the specific person setting unit by which one of a plurality of reproducing modes can be selected, each of the reproducing modes having a respective number of the video information of the specific person, and wherein the control unit controls the reproducing unit so as to reproduce the video information of the specific person according to the selected one of the reproducing modes.

6. (Original) The recording and reproducing apparatus according to claim 1,

wherein the controlling unit further controlling the reproducing unit to reproduce the video information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the video information under the first reproducing mode is shorter than a reproducing time required for reproducing the video information under the second reproducing mode, and the video information reproduced under the

second mode includes the video information reproduced under the first reproducing mode in addition to other of the video information not reproduced under the first reproducing mode.

7. (Original) The recording and reproducing apparatus according to claim 6,

wherein the controlling unit further controlling the reproducing unit to reproduce the video information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the video information under the third reproducing mode is longer than the reproducing time required for reproducing the video information under the second reproducing mode.

8. (Cancelled)

9. (Original) The recording and reproducing apparatus according to claim 8, wherein the image information to be selectively reproduced is the image information which is recognized as including the specific person before the recording of the image information.

10. (Cancelled)

11. (Original) The recording and reproducing apparatus according to claim 8, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

12. (Original) The recording and reproducing apparatus according to claim 11, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode,

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

13. (Cancelled)

14. (Original) The recording and reproducing apparatus according to claim 13, wherein the image information to be selectively and sequentially reproduced is the image information which is recognized as including the specific person before the recording of the image information by the recorder.

15. (Cancelled)

16. (Original) The recording and reproducing apparatus according to claim 13,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

17. (Original) The recording and reproducing apparatus according to claim 16,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

18. (Cancelled)

19. (Original) The recording and reproducing apparatus according to claim 18,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

20. (Original) The recording and reproducing apparatus according to claim 19,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

21. (Newly Added) A recording and reproducing apparatus for recording and reproducing image information, comprising:

a processor; and

a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:

capture a photograph and generate image information of the photograph;

record the image information in a recording medium;

execute a face-recognizing process on the image information to recognize a face;

reproduce the recorded image from the recording medium;

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person; and

selectively reproduce the recorded image information which includes the registered specific person,

wherein, in the first setting mode, the specific person is set before photographing the person with a face.

22. (Newly Added) The recording and reproducing apparatus according to claim 21, wherein the image information to be selectively reproduced is the image information which is recognized as including the specific person before the recording of the image information.

23. (Newly Added) The recording and reproducing apparatus according to claim 21, wherein the image information to be selectively reproduced is the image information having a relatively high importance level picked out among the image information recorded in the recording medium which includes the registered specific person.

24. (Newly Added) The recording and reproducing apparatus according to claim 21, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image

information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

25. (Newly Added) The recording and reproducing apparatus according to claim 24, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode,

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

26. (Newly Added) A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face,

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person,

firstly pick out image information which includes the registered specific person,

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition,

wherein, in the first setting mode, the specific person is set before photographing the person with a face.

27. (Newly Added) The recording and reproducing apparatus according to claim 26, wherein the image information to be selectively and sequentially reproduced is the image information which is recognized as including the specific person before the recording of the image information by the recorder.

28. (Newly Added) The recording and reproducing apparatus according to claim 26, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information having the predetermined condition including a relatively high importance level picked out from among the image information recorded in the recording medium which includes the registered specific person.

29. (Newly Added) The recording and reproducing apparatus according to claim 26,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

30. (Newly Added) The recording and reproducing apparatus according to claim 29,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

31. (Newly Added) A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face;

register a person in the image information as a specific person, wherein a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person;

firstly pick out image information which includes the registered specific person,

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition,

wherein the specific person is set before photographing the person with a face.

32. (Newly Added) The recording and reproducing apparatus according to claim 31,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

33. (Newly Added) The recording and reproducing apparatus according to claim 31,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

34. (Newly Added) The recording and reproducing apparatus of claim 1, further comprising a touch panel adhered to a screen of a display.

35. (Newly Added) The recording and reproducing apparatus of claim 34, wherein the first setting mode and the second setting mode are each selected using the touch panel via a user interface.

36. (Newly Added) The recording and reproducing apparatus according to claim 1, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

37. (Newly Added) The recording and reproducing apparatus according to claim 1, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.

38. (Newly Added) The recording and reproducing apparatus according to claim 1, wherein the recording and reproducing apparatus is a mobile phone.

39. (Newly Added) The recording and reproducing apparatus according to claim 1, wherein the recording and reproducing apparatus is an electronic camera.

40. (Newly Added) The recording and reproducing apparatus according to claim 1, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.

41. (Newly Added) The recording and reproducing apparatus according to claim 1, further comprising:

a video camera providing image data; and

a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

42. (Newly Added) The recording and reproducing apparatus according to claim 41, wherein the frame is a rectangular frame.

43. (Newly Added) The recording and reproducing apparatus according to claim 1, further comprising a display,

wherein a thumbnail corresponding to the recorded image is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.

44. (Newly Added) The recording and reproducing apparatus according to claim 43, wherein the icon is displayed on the thumbnail.

45. (Newly Added) The recording and reproducing apparatus according to claim 1,

further comprising a processor and memory,

wherein the memory stores instructions that, when executed by the processor, cause the processor to:

capture video information corresponding to a scene;

automatically set a plurality of sections corresponding to the video information of the scene;

generate a plurality of thumbnails corresponding to the plurality of sections; and

display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.

46. (Newly Added) The recording and reproducing apparatus according to claim 45, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.

47. (Newly Added) The recording and reproducing apparatus according to claim 1, further comprising a display,

wherein the display is configured to display a plurality of images,

wherein each image in the plurality of images includes a face of a different person, and

wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

48. (Newly Added) The recording and reproducing apparatus according to claim 1, wherein the face-recognizing process is executed on image information captured from an external camera not included in the recording and reproducing apparatus.

49. (Newly Added) The recording and reproducing apparatus according to claim 1, further comprising:

an analog/digital converter, wherein the analog/digital converter is configured to convert an analog image signal corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information,

wherein the encoded image information is stored in the memory.

50. (Newly Added) The recording and reproducing apparatus according to claim 49, wherein the predetermined compression encoding method is an MPEG method.

51. (Newly Added) The recording and reproducing apparatus according to claim 21, further comprising a touch panel adhered to a screen of a display.

52. (Newly Added) The recording and reproducing apparatus according to claim 51, wherein the first setting mode and the second setting mode are each selected using the touch panel via a user interface.

53. (Newly Added) The recording and reproducing apparatus according to claim 21, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

54. (Newly Added) The recording and reproducing apparatus according to claim 21, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.

55. (Newly Added) The recording and reproducing apparatus according to claim 21, wherein the recording and reproducing apparatus is a mobile phone.

56. (Newly Added) The recording and reproducing apparatus according to claim 21, wherein the recording and reproducing apparatus is an electronic camera.

57. (Newly Added) The recording and reproducing apparatus according to claim 21, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.

58. (Newly Added) The recording and reproducing apparatus according to claim 21, further comprising

a video camera providing image data; and

a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

59. (Newly Added) The recording and reproducing apparatus according to claim 58, wherein the frame is a rectangular frame.

60. (Newly Added) The recording and reproducing apparatus according to claim 21, further comprising a display,

wherein the memory further stores instructions that, when executed by the processor, cause the processor to generate a thumbnail corresponding to the recorded image such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.

61. (Newly Added) The recording and reproducing apparatus according to claim 60, wherein the icon is displayed on the thumbnail.

62. (Newly Added) The recording and reproducing apparatus according to claim 21, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

capture video information corresponding to a scene;

automatically set a plurality of sections corresponding to the video information of the scene;

generate a plurality of thumbnails corresponding to the plurality of sections; and

display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.

63. (Newly Added) The recording and reproducing apparatus according to claim 62, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.

64. (Newly Added) The recording and reproducing apparatus according to claim 21, further comprising a display,

wherein the display is configured to display a plurality of images,

wherein each image in the plurality of images includes a face of a different person, and

wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

65. (Newly Added) The recording and reproducing apparatus according to claim 21, wherein the memory further stores instructions that, when executed by the processor, cause the processor to execute the face-recognizing process on image information captured from an external camera not included in the recording and reproducing apparatus.

66. (Newly Added) The recording and reproducing apparatus according to claim 21, further comprising:

an analog/digital converter, wherein the analog/digital converter is configured to convert an analog image signal corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information,

wherein the encoded image information is stored in the memory.

67. (Newly Added) The recording and reproducing apparatus according to claim 66, wherein the predetermined compression encoding method is an MPEG method.

68. (Newly Added) The recording and reproducing apparatus of claim 26, further comprising a touch panel adhered to a screen of a display.

69. (Newly Added) The recording and reproducing apparatus of claim 68, wherein the first setting mode and the second setting mode are each selected using the touch panel via a user interface.

70. (Newly Added) The recording and reproducing apparatus according to claim 26, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

71. (Newly Added) The recording and reproducing apparatus according to claim 26, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.

72. (Newly Added) The recording and reproducing apparatus according to claim 26, wherein the recording and reproducing apparatus is a mobile phone.

73. (Newly Added) The recording and reproducing apparatus according to claim 26, wherein the recording and reproducing apparatus is an electronic camera.

74. (Newly Added) The recording and reproducing apparatus according to claim 26, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.

75. (Newly Added) The recording and reproducing apparatus according to claim 26, further comprising:

a video camera providing image data; and

a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

76. (Newly Added) The recording and reproducing apparatus according to claim 75, wherein the frame is a rectangular frame.

77. (Newly Added) The recording and reproducing apparatus according to claim 26, further comprising a display,

wherein the processing circuitry is further configured to generate a thumbnail corresponding to the recorded image such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.

78. (Newly Added) The recording and reproducing apparatus according to claim 77, wherein the icon is displayed on the thumbnail.

79. (Newly Added) The recording and reproducing apparatus according to claim 26, wherein the processing circuitry is further configured to:

capture video information corresponding to a scene;

automatically set a plurality of sections corresponding to the video information of the scene;

generate a plurality of thumbnails corresponding to the plurality of sections; and

display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.

80. (Newly Added) The recording and reproducing apparatus according to claim 79, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.

81. (Newly Added) The recording and reproducing apparatus according to claim 26, further comprising a display,

wherein the display is configured to display a plurality of images,

wherein each image in the plurality of images includes a face of a different person, and

wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

82. (Newly Added) The recording and reproducing apparatus according to claim 26, wherein the processing circuitry is further configured to execute the face-recognizing process on image

information captured from an external camera not included in the recording and reproducing apparatus.

83. (Newly Added) The recording and reproducing apparatus according to claim 26, further comprising:

an analog/digital converter, wherein the analog/digital converter is configured to convert an analog image signal corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information,

wherein the encoded image information is stored in the memory.

84. (Newly Added) The recording and reproducing apparatus according to claim 83, wherein the predetermined compression encoding method is an MPEG method.

85. (Newly Added) The recording and reproducing apparatus of claim 31, further comprising a touch panel adhered to a screen of a display.

86. (Newly Added) The recording and reproducing apparatus according to claim 31, wherein the face-recognizing process is executed for a specific person that is set before photographing that specific person.

87. (Newly Added) The recording and reproducing apparatus according to claim 31, wherein the recording medium is an external drive connected to the recording and reproducing apparatus via USB.

88. (Newly Added) The recording and reproducing apparatus according to claim 31, wherein the recording and reproducing apparatus is a mobile phone.

89. (Newly Added) The recording and reproducing apparatus according to claim 31, wherein the recording and reproducing apparatus is an electronic camera.

90. (Newly Added) The recording and reproducing apparatus according to claim 31, further comprising a user interface including a first option and a second option,

wherein, when the first option is selected, the recording and reproducing apparatus enters a record mode to capture video information, and

wherein, when the second option is selected, the recording and reproducing apparatus enters a reproduction mode to reproduce and display recorded video information.

91. (Newly Added) The recording and reproducing apparatus according to claim 31, further comprising:

a video camera providing image data; and

a display, wherein, in response to the face-recognizing process recognizing that a face of a person is included in the image data, the display displays the image data with a frame surrounding at least a portion of the face of the person.

92. (Newly Added) The recording and reproducing apparatus according to claim 91, wherein the frame is a rectangular frame.

93. (Newly Added) The recording and reproducing apparatus according to claim 31, further comprising a display,

wherein the processing circuitry is further configured to generate a thumbnail corresponding to the recorded image such that the thumbnail is displayed on the display with an icon having a predetermined shape when an importance level is set for the recorded image via a user interface.

94. (Newly Added) The recording and reproducing apparatus according to claim 93, wherein the icon is displayed on the thumbnail.

95. (Newly Added) The recording and reproducing apparatus according to claim 31, wherein the processing circuitry is further configured to:

capture video information corresponding to a scene;

automatically set a plurality of sections corresponding to the video information of the scene;

generate a plurality of thumbnails corresponding to the plurality of sections; and

display the plurality of thumbnails, wherein each of the plurality of thumbnails is associated with the same video information corresponding to the scene.

96. (Newly Added) The recording and reproducing apparatus according to claim 95, wherein displaying the plurality of thumbnails includes displaying timing information indicating a lapse time of a particular section within the captured video information of the scene.

97. (Newly Added) The recording and reproducing apparatus according to claim 31, further comprising a display,

wherein the display is configured to display a plurality of images,

wherein each image in the plurality of images includes a face of a different person, and

wherein displaying the plurality of images includes displaying faces without displaying objects included in the background of the plurality of images.

98. (Newly Added) The recording and reproducing apparatus according to claim 31, wherein the processing circuitry is further configured to execute the face-recognizing process on image information captured from an external camera not included in the recording and reproducing apparatus.

99. (Newly Added) The recording and reproducing apparatus according to claim 31, further comprising:

an analog/digital converter, wherein the analog/digital converter is configured to convert an analog image signal corresponding to the captured photograph into a digital image signal; and

a codec for compressing the digital image signal using a predetermined compression encoding method and generating encoded image information.

100. (Newly Added) The recording and reproducing apparatus according to claim 99, wherein the predetermined compression encoding method is an MPEG method.

REMARKS

Patent Owner hereby submits the following Amendment and Remarks in response to the non-final Office Action mailed August 19, 2021 ("Non-Final Action"). Claims 8, 10-13, and 15-20 are subject to reexamination. Claims 1-7, 9, and 14 are not subject to reexamination. By way of this response, Patent Owner hereby cancels claims 8, 10, 13, 15, and 18, and adds new claims 21-100.

Summary of Examiner Interview

Patent Owner thanks Primary Examiner Peikari for the courtesies extended during the video interview that occurred on October 5, 2021, at 1:00 p.m. Eastern Time. The participants were Primary Examiner B. James Peikari, Supervisory Patent Examiner Catherine Tarae, and Supervisory Patent Examiner Alexander Kosowski from the Office, and Scott Kelly (Reg. No. 65,121), Bryan Nese (Reg. No. 66,023), and Saqib Siddiqui (Reg. No. 68,626) as attorneys on behalf of Patent Owner.

During the interview, Patent Owner's representatives explained the differences between the cited art and the limitations of claims 8, 13, and 18, in particular the limitation regarding the "first setting mode." Specifically, Patent Owner's representatives explained that neither Gallagher nor Nakashima (nor the two in combination) taught these features of these claims, as outlined in more detail herein. Patent Owner's representatives also discussed the features of dependent claim 12 that distinguished over Nakashima. Primary Examiner Peikari agreed to consider Patent Owner's proposed amendment (*i.e.*, new claim 21) in view of Nakashima and other art.

Should it help to advance prosecution, Patent Owner invites the examiners to contact the undersigned if any issues remain.

Exemplary Support for Newly Added Claims

By way of this amendment, and without conceding that any of the statements or positions of the Office Action are correct, Patent Owner hereby cancels claims 8, 10, 13, 15, and 18 and adds new claims 21 through 100. These amendments are made solely to advance prosecution in a timely and efficient manner.

New claims 21-33 build upon original claims 8-20. Newly added independent claims 21, 26, and 31 include the full original language of claims 8, 13, and 18, respectively, but further add

the limitation that, in the first setting mode, the specific person is set before photographing the person with a face.

Patent Owner has also added new dependent claims that recite various features of preferred embodiments described in the specification. These features are now recited in newly added claims 34-50, which depend from independent claim 1; newly added claims 51-67, which depend from independent claim 21; newly added claims 68-84, which depend from independent claim 26; and newly added claims 85-100, which depend from claim 31.

No new matter has been added. Exemplary support for newly added claims 21-100 is shown in the following table.

Claim No.	Exemplary Support in '848 Patent Specification
21.	Claim 8, 12:22-25, 12:36-38, Figure 13
22.	Claim 9
23.	Claim 10
24.	Claim 11
25.	Claim 12
26.	Claim 13, 12:22-25, 12:36-38, Figure 13
27.	Claim 14
28.	Claim 15
29.	Claim 16
30.	Claim 17
31.	Claim 18, 12:22-25, 12:36-38, Figure 13
32.	Claim 19
33.	Claim 20
34.	3:51-53
35.	3:51-53, 12:28-42, Figure 14

Claim No.	Exemplary Support in '848 Patent Specification
36.	12:14-24
37.	13:50-59
38.	13:36-42
39.	13:36-42
40.	3:60-67, 4:36-42
41.	6:16-23, Figure 4
42.	6:16-23, Figure 4
43.	11:20-24, Figure 12
44.	11:20-24, Figure 12
45.	7:32-35, 10:44-49, Figure 11
46.	10:44-49
47.	7:65-8:3, Figure 7
48.	7:16-21
49.	4:4-19
50.	4:15-17
51.	3:51-53
52.	3:51-53, 12:28-42, Figure 14
53.	12:14-24
54.	13:50-59
55.	13:36-42
56.	13:36-42
57.	3:60-67, 4:36-42
58.	6:16-23, Figure 4

Claim No.	Exemplary Support in '848 Patent Specification
59.	6:16-23, Figure 4
60.	11:20-24, Figure 12
61.	11:20-24, Figure 12
62.	7:32-35, 10:44-49, Figure 11
63.	10:44-49
64.	7:65-8:3, Figure 7
65.	7:16-21
66.	4:4-19
67.	4:15-17
68.	3:51-53
69.	3:51-53, 12:28-42, Figure 14
70.	12:14-24
71.	13:50-59
72.	13:36-42
73.	13:36-42
74.	3:60-67, 4:36-42
75.	6:16-23, Figure 4
76.	6:16-23, Figure 4
77.	11:20-24, Figure 12
78.	11:20-24, Figure 12
79.	7:32-35, 10:44-49, Figure 11
80.	10:44-49
81.	7:65-8:3, Figure 7

Claim No.	Exemplary Support in '848 Patent Specification
82.	7:16-21
83.	4:4-19
84.	4:15-17
85.	3:51-53
86.	12:14-24
87.	13:50-59
88.	13:36-42
89.	13:36-42
90.	3:60-67, 4:36-42
91.	6:16-23, Figure 4
92.	6:16-23, Figure 4
93.	11:20-24, Figure 12
94.	11:20-24, Figure 12
95.	7:32-35, 10:44-49, Figure 11
96.	10:44-49
97.	7:65-8:3, Figure 7
98.	7:16-21
99.	4:4-19
100.	4:15-17

Patent Owner notes that the above citations are exemplary, not exhaustive, and that support for the newly added claims may be found throughout the '848 Patent's written description, figures, and original claims.

Response to Prior Art Rejection of Independent Claims

The Non-Final Action rejects claims 8, 10-13, and 15-20 under 35 U.S.C. § 103 as unpatentable over Gallagher[1] in view of Nakashima.[2] Patent Owner respectfully traverses this rejection.

Original independent claims 8, 13, and 18 (and all claims depending therefrom) are patentable over the cited references at least because each independent claim recites the limitation of "wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person" (claims 8, 13) or "wherein a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person" (claim 18).

Neither Gallagher nor Nakashima (nor the two in combination) teach the claim limitation of "wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person," e.g., a process of a registering a person via "newly photographing" that person.

At best, the Gallagher-Nakashima combination merely teaches "manual" registration of individuals, requiring a user to manually input names, etc. for individuals that have already been photographed. The combination fails to teach the claimed feature of the "first setting mode" in the '848 Patent, whereby the act of newly photographing a person results in the registration of the person, in contrast to the "second setting mode," whereby the registration occurs by "select[ing] from a plurality of faces in the image information recorded in the recording medium."

Stated differently, the claimed "first setting mode" does not require the user to input names, etc. for the new image to be properly categorized as being the image of a specific person; it simply requires "newly photographing" that person, and then that image is thereby registered as being one containing the specific person. '848 Patent at 12:33-41; FIG. 13. For example, in certain embodiments, the registration of a specific person/VIP occurs "based upon the face recognizing process results," not based upon a user's entry of management information, such as via the input of a name or the selection of an existing photo of a VIP. *See id.* at 12:53-62. In one example of a

[1] U.S. Patent Application Publication No. 2007/0098303
[2] U.S. Patent Application Publication No. 2007/0019083

system in accordance with this feature of a "first setting mode," newly photographed images containing persons are automatically registered as containing specific persons. *See id.* In another example, a user selects an option that allows registration by taking a new photo of an individual.

Gallagher does not disclose or teach the claimed "first setting mode," as noted in the non-final Office Action. *See* Non-Final Action at 4 (stating that this limitation is "suggested, but not explicitly taught by Gallagher" and that "Gallagher suggests, but does not specifically mention allowing users to register a person's face using a newly captured image."). Patent Owner agrees that Gallagher does not teach the claimed "first setting mode."

Nakashima does not teach the claimed "first setting mode" either. For example, Nakashima at best teaches that a user may "tag" a newly photographed image with the name of an individual (i.e., manual registration). *E.g.*, Nakashima at ¶ [0123] ("The photographer photographs a subject at a size and clarity sufficient for identifying the face of the subject, and inputs the 'name' of the subject through the operation section 120" (emphasis added).), ¶ [0145] ("The subject management section 20e accepts input of 'names' of subjects through the graphical user interface (GUI), not shown, displayed on the liquid crystal panel 71" (emphasis added)). Similarly, paragraph [0147] of Nakashima merely explains that a user may "tag" photos that originate outside of Nakashima's camera. *Id.* at ¶ [0147] ("[F]acial images may be, for instance, received from an external server via the communication port 107 or read out from the memory card 200."). Nakashima thus does not teach the claimed "first setting mode."

In sum, Gallagher is silent on the ability to register specific individuals by newly photographing the individual, and Nakashima merely teaches allowing users to manually input names of individuals in photographs that have already been taken. Thus, the combination of these references fails to teach or suggest the claimed feature of a "first setting mode" in which "a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person," as recited by independent claims 8, 13, and 18.

However, solely to advance prosecution, Patent Owner proposes new claims 21, 26, and 31, which mirror original claims 8, 13, and 18, respectively, and also add the new limitation "wherein, in the first setting mode, the specific person is set before photographing the person with a face." This limitation further clarifies the features of the claimed "first setting mode" to more clearly set forth the distinctions between the claimed invention and the cited art. Claims 8, 10, 13,

15, and 18 are cancelled herein solely to simplify the issues and efficiently advance this reexamination to conclusion and issuance of a reexamination certificate confirming the patentability of the other original claims and the new claims.

Because neither Gallagher nor Nakashima (nor the two in combination) teach these features, new claims 21, 26, and 31 (as well as all claims depending therefrom) are distinct over the art of record.

Response to Prior Art Rejection of Dependent Claims 11, 12, 15, 16, 17, 19, and 20

The Non-Final Action rejects dependent claims 11, 12, 15, 16, 17, 19, and 20 under 35 U.S.C. § 103 as unpatentable over Gallagher in view of Nakashima. Patent Owner respectfully traverses this rejection.

Dependent claims 11, 12, 15, 16, 17, 19, and 20 are each directed to "reproduction" modes, not capture/recording modes. For example, claim 11 recites "control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode."

At best, Nakashima discloses a variety of "capture modes," not reproducing modes and reproduction of photos already recorded in the recorded medium, as claimed. *See* Non-Final Action at 6-7. Capturing/recording photos or videos in various modes does not correspond to controlling reproducing modes and reproducing already recorded/captured modes with different reproducing times. These dependent claims are therefore distinct over the Gallagher-Nakashima combination for this additional reason.

CONCLUSION

Accordingly, challenged claims 11, 12, 16, 17, 19, and 20 of the '848 Patent are novel and nonobvious over the art of record, as are new claims 21-100. Patent Owner thus respectfully requests that the Office promptly issue a Notice of Intent to Issue Reexamination Certificate confirming the validity of all currently pending claims of the '848 Patent.

If any issues remain, the Examiner is invited to contact the undersigned at (202)824-3158.

Dated: October 19, 2021

Respectfully submitted,

By: /Scott M Kelly/
Scott M. Kelly
Registration No.: 65,121

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and accurate copy of the foregoing AUTHORIZATION FOR INTERNET COMMUNICATIONS IN A PATENT APPLICATION, is being served in its entirety via First Class Mail, postage prepaid, on the following counsel of record:

Adam P. Seitz & Jennifer C. Bailey
ERISE IP, P.A.
7015 College Boulevard, Suite 700
Overland Park, Kansas 66211

on this 16th day of September, 2021.

/Rachel Lichter/
Rachel Lichter

Doc Code: ECOMM.AUTH/ECOMM.WTDW
Doc Description: Internet Communications Authorized/Internet Communications Authorization Withdrawn

PTO/SB/439 (11-15)

AUTHORIZATION FOR INTERNET COMMUNICATIONS IN A PATENT APPLICATION OR REQUEST TO WITHDRAW AUTHORIZATION FOR INTERNET COMMUNICATIONS		
	Application No.	90/014,641
	Filing Date	December 23, 2020
	First Named Inventor	
	Art Unit	3992
	Examiner Name	B. Peikari
	Practitioner Docket No.	009379.00008\US

To: Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I. To authorize permission for Internet Communications.

[X] Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with the undersigned and practitioners in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via video conferencing, instant messaging, or electronic mail. I understand that a copy of these communications will be made of record in the application file. (MPEP 502.03)

II. To withdraw authorization for Internet Communications.

[ ] The authorization given on _____, to the USPTO to communicate with the undersigned and any practitioner in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via Internet communications such as video conferencing, instant messaging, or electronic mail is hereby withdrawn. I understand that the withdrawal is effective when approved rather than when received.

I am the

[ ] applicant.

[X] attorney or agent of record. Registration number 65,121.

[ ] attorney or agent acting under 37 CFR 1.34. Registration number _____.

/Scott M Kelly/	September 16, 2021
Signature	Date
Scott M. Kelly	(202) 824-3000
Typed or printed name	Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Juristic entities must be represented by a patent practitioner (see 37 CFR 1.31, which is applicable to any paper filed on or after September 16, 2012, that is presented on behalf of a juristic entity, regardless of application filing date). Submit multiple forms if more than one signature is required, see below*.

[ ] * Total of 1 forms are submitted.

Electronic Acknowledgement Receipt

EFS ID:	43779505
Application Number:	90014641
International Application Number:	
Confirmation Number:	3601
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	10176848
Customer Number:	177632
Filer:	Scott M Kelly/Rachel Lichter
Filer Authorized By:	Scott M Kelly
Attorney Docket Number:	2638-19.06
Receipt Date:	16-SEP-2021
Filing Date:	23-DEC-2020
Time Stamp:	07:14:33
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Reexam Certificate of Service	Certificate_of_Service.pdf	12136 59cf99ba3916d0d74eb33bb9c58dfe955a1cb4a1	no	1

Warnings:

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2	Reexam Miscellaneous Incoming Letter	Internet_Comms_Auth.pdf	49481 b0685ec6d6ec16e37669e2f45b75bc113c4cb5cc	no	1
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

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If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/014,641	12/23/2020	10176848	2638-19.06	3601

177632 7590 08/19/2021

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PEIKARI, BEHZAD	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
08/19/2021	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/014,641* .

PATENT UNDER REEXAMINATION *10176848* .

ART UNIT *3992* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Office Action in Ex Parte Reexamination	**Control No.** 90/014,641	**Patent Under Reexamination** 10176848	
	Examiner BEHZAD PEIKARI	**Art Unit** 3992	**AIA (FITF) Status** No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

a. ☑ Responsive to the communication(s) filed on 29 April 2021.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

b. ☐ This action is made FINAL.

c. ☑ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire 2 month(s) from the mailing date of this letter. Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).** If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☑ Information Disclosure Statement, PTO/SB/08.
3. ☐ Interview Summary, PTO-474.
4. ☐ _____.

Part II SUMMARY OF ACTION

1a. ☑ Claims 8,10-13 and 15-20 are subject to reexamination.

1b. ☑ Claims 1-7,9 and 14 are not subject to reexamination.

2. ☐ Claims _____ have been canceled in the present reexamination proceeding.

3. ☐ Claims _____ are patentable and/or confirmed.

4. ☑ Claims 8,10-13 and 15-20 are rejected.

5. ☐ Claims _____ are objected to.

6. ☐ The drawings, filed on _____ are acceptable.

7. ☐ The proposed drawing correction, filed on _____ has been (7a) ☐ approved (7b) ☐ disapproved.

8. ☑ Acknowledgment is made of the priority claim under 35 U.S.C. 119(a)-(d) or (f).

   a) ☑ All b) ☐ Some* c) ☐ None of the certified copies have

   1 ☐ been received.

   2 ☐ not been received.

   3 ☑ been filed in Application No. 12/430,185.

   4 ☐ been filed in reexamination Control No. _____.

   5 ☐ been received by the International Bureau in PCT application No. _____.

   * See the attached detailed Office action for a list of the certified copies not received.

9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.

10. ☐ Other: _____

cc: Requester (if third party requester)

DETAILED ACTION

Ex Parte Reexamination

Claims 8, 10-13, and 15-20 of U.S. Patent Number 10,176,848 (the '848 patent) are subject to reexamination in this proceeding.

Prosecution Summary

The following is a brief summary of the prosecution to date in this *ex parte* reexamination proceeding:

- On December 23, 2020, a request for *ex parte* reexamination of claims 8, 10-13, and 15-20 of the '848 patent was filed by a third party requestor.
- On January 29, 2021, the USPTO mailed a decision granting *ex parte* reexamination and ordering the reexamination of claims 8, 10-13, and 15-20.

References

The references discussed herein are as follows:

(1) U.S. Patent Application No. 2007/0098303 to Gallagher et al. ("Gallagher").

(2) U.S. Patent Application No. 2007/0019083 to Nakashima ("Nakashima").

Note: A declaration by Dr. Charles D. Creusere has been considered.

Claim Rejections – Relevant Statutes

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim Rejections – Detailed Explanation

Claims 8, 10-13, and 15-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Gallagher in view of Nakashima.

With regard to claim 8, Gallagher teaches a recording and reproducing apparatus for recording and reproducing image information (*note Figure 1*), comprising:

a processor (*digital processor 320*); and

a memory coupled to the processor (*note firmware memory 328*) and storing instructions that, when executed by the processor, cause the processor (*note the stored firmware that controls the processor in paragraph [0039]*) to:

capture a photograph (*note the capturing of analog signals using an image sensor array and converting these signals to digital and storing the images in memory, paragraphs [0037] and [0039]*) and generate image information of the photograph (*note the creation and storage of metadata for each picture, as in paragraph [0041]*);

record the image information in a recording medium (*note image/data memory 330*);

execute a face-recognizing process on the image information to recognize a face (*note e.g., paragraph [0075] or face detector 270; see also Figure 12D*);

reproduce the recorded image from the recording medium (*note the display 332 and the displaying of digital images on to a user, paragraphs [0043] or [0048]*);

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person (*suggested, but not explicitly taught by Gallagher; see discussion of obviousness below*), and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person (*Gallagher teaches registering a face using stored digital images, using a labeler, either in an individual photo or wherein one or more individuals in a group photo may be labeled; note paragraphs [0049]-[0050]*); and

selectively reproduce the recorded image information which includes the registered specific person (*note the person finding described in Figures 2 and 7, and the "digital image collection 102 containing people is searched for a person of interest by a person finder 108. A digital image collection subset 112 is the set of images from the digital image collection 102 believed to contain the person of interest" in paragraphs [0048]-[0049]*).

As mentioned above, while Gallagher teaches registering a person's face using images stored in memory, Gallagher suggests, but does not specifically mention allowing users to register a person's face using a newly captured image. Nakashima, on the other hand, explicitly teaches that registering facial images may be performed by

individually photographing the face of a subject (*note Nakashima, paragraph [0123]*). In fact, Nakashima teaches both the claimed first mode (*even describing best practices for registering individuals in new photos; Nakashima paragraph [0145]*) and the claimed second mode (*registering an individual using a pre-stored photo; Nakashima paragraph [0147]*).

It would have been obvious to one having ordinary skill in the art to incorporate Nakashima's use of both modes of registering individuals using either new photos or previously stored photos in the system of Gallagher, since (1) both references were in the same field of endeavor, namely recording and registering digital images, so combining such features would have been relatively straightforward, and likely not requiring any extra hardware in the Gallagher system (such an feature could have been added with a relatively straightforward software or firmware change) and (2) adding Nakashima's flexible use of new photos as well as old photos for registering an individual would have had the advantage of allowing the user to photograph and register people right away.

With regard to claim 10, the combination of Gallagher and Nakashima teaches the recording and reproducing apparatus according to claim 8, wherein the image information to be selectively reproduced is the image information having a relatively high importance level picked out among the image information recorded in the recording medium which includes the registered specific person (*for example, Gallagher teaches this feature of ranking high to low importance, "The digital image collection subset 112 is the collection of images and videos having an associated proposed label with a*

probability that exceeds a threshold T_o, where T_o ranges from $0<=T_o<=1.0$. Preferably, the digital image collection Subset 112 also contains the image and videos associated with features having labels matching the identity of the person of interest 252. The images and videos of the digital image collection subset are sorted so that images and videos determined to have the highest belief of containing the person of interest appear at the top of the subset, following only the images and videos with features having labels matching the identity of the person of interest 252"; note Gallagher, paragraph [0138] and further noted paragraphs [0127]-[0146] for a more detailed discussion of the algorithm for assessing both "local features" and "global features" to determine a confidence level that a given image belongs to a registered VIP).

With regard to claim 11, the combination of Gallagher and Nakashima teaches the recording and reproducing apparatus according to claim 8, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode (*Nakashima teaches a variety of camera modes and the ability to switch between them, note paragraphs [0079] and [0080], including self-timer, macro photography, flash photography, self photographing mode, automatic photography, manual photography, and zoom, which as described in paragraph [0090] uses aperture adjustment to drive the zoom lens*),

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing

the image information under the second reproducing mode (*for example, with the aperture adjustment taught above for Nakashima, using a high f/stop means that less light is entering the lens and therefore the shutter will need to stay open longer which means a slower shutter speed*), and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode (*again, with regard to the aperture adjustment in Nakashima, or virtually any camera, a higher f/stop means a smaller the opening in the lens, which means a greater depth of field, which means a sharper background, which means more information is required to store the image; as another example, using the timer mode would add to the amount of time required*).

With regard to claim 12, the combination of Gallagher and Nakashima teaches recording and reproducing apparatus according to claim 11, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode (*Nakashima teaches a variety of camera modes and the ability to switch between them, note paragraphs [0079] and [0080], including self-timer, macro photography, flash photography, self photographing mode, automatic photography, manual photography, and zoom, which as described in paragraph [0090] uses aperture adjustment to drive the zoom lens*),

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode (*again, with regard to the aperture adjustment in Nakashima, or virtually any camera, a higher f/stop means a smaller the opening in the lens, which means a greater depth of field, which means a sharper background, which means more information is required to store the image; thus, depending on which mode is selected, a different aperture may be used and require a different amount of time and more or less information to store the resulting image; as another example, using the timer mode would add to the amount of time required*).

With regard to claims 13 and 15-20, these are rejected for reasons similar to those described above in the rejections of claims 8 and 10-12.

Further, with regard to the limitation of a user selecting the predetermined condition in claim 13, Gallagher teaches the ability to:

firstly pick out image information which includes the registered specific person (*note paragraph [0148]*),

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user (*note that the user may even further label the displayed images to refine the results, paragraph [0148], including name or identifier, paragraphs [0150]-[0151], specifying what features to search, "The user can indicate the location of the object of*

interest by using a mouse to click on the positions of the eyes for example", paragraph [0152], et seq.), and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition (*note paragraphs [0146]-[0154]*).

Other References Submitted

The other prior art disclosures filed during this proceeding are deemed to be material and relevant since they appear to teach or suggest features of the independent claims.

However, any additional rejection(s) based on these references may be unnecessary or redundant at this time.

Examiner's Statement of Reasons for Patentability/Confirmation

None of the claims subject to reexamination have been confirmed at this time.

Conclusion

For the reasons described above, each of claims 8, 10-13, and 15-20 is rejected. Because this is a first Office action on the merits, this action is made **non-final**.

Amendment in Reexamination Proceedings

Patent Owner is notified that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 CFR 1.530(d)-(j),

must be formally presented pursuant to 37 CFR 1.52(a) and (b), and must contain any fees required by 37 CFR 1.20(c).

In order to ensure full consideration of any amendments, affidavits or declarations, or other documents as evidence of patentability, such documents must be submitted in response to this Office action. Submissions will be governed by the requirements of 37 CFR 1.116, after final rejection and 37 CFR 41.33 after appeal, which will be strictly enforced. See MPEP § 2250(IV) for examples to assist in the preparation of proper proposed amendments in reexamination proceedings.

Service of Papers

After filing of a request for ex parte reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requester proceedings are merged) in the reexamination proceeding in the manner provided in 37 CFR 1.248. The document must reflect service or the document may be refused consideration by the Office. See 37 CFR 1.550(f).

Extensions of Time

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 CFR

1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Litigation Reminder

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the patent throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

All correspondence relating to this *Ex Parte* reexamination proceeding should be directed:

By EFS: Registered users may submit via the electronic filing system EFS-web, at

https://efs.uspto.gov/efile/myportal/efs-registered

By Mail to: Mail Stop *Ex Parte* Reexam

Attn: Central Reexamination Unit
Commissioner of Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand to: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i) (C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely filed if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed:

/B. James Peikari/
Primary Examiner
Central Reexamination Unit 3992

/M.F/
Supervisory Patent Examiner, Art Unit 3992

Conferees:

/ADAM L BASEHOAR/
Primary Examiner, Art Unit 3992

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/014,641	10176848
	Certificate Date	Certificate Number

Requester Correspondence Address: ☐ Patent Owner ☑ Third Party
ERISE IP, P.A. 7015 COLLEGE BLVD., STE 700 OVERLAND PARK, KS 66211

LITIGATION REVIEW ☑	BJP (examiner initials)	12 August 2021 (date)
Case Name		Director Initials
Maxell, Ltd. v. Apple Inc. (6:20cv646, Western District, TX) (Dismissed)		
US ITC Inv. No. 337-TA-1215 (as identified by requester) (Terminated)		

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	**NUMBER**
Inter Partes (now terminated)	IPR2021-00367

/B. JAMES PEIKARI/ Reexamination Specialist, CRU 3992	

Doc Code: IDS
Document Description: Information Disclosure Statement filed

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37 CFR 1.501 INFORMATION DISCLOSURE CITATION IN A PATENT

(Sheet 1 of 11)

Docket Number (Optional)	Patent Number
009379.00008\US	10,176,848
Applicant	
Issue Date	Art Unit
January 8, 2019	3992

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	10,169,646	01-01-2019	Ganong et al.	1	1	10-20-2016
	4,047,187	09-06-1977	Mashimo et al.	396	100	03-31-1975
	4,317,991	03-02-1982	Stauffer	250	201.4	03-12-1980
	4,367,027	01-04-1983	Stauffer	396	144	09-28-1981
	4,638,364	01-20-1987	Hiramatsu	348	356	10-28-1985
	5,291,234	03-01-1994	Shindo et al.	396	91	08-07-1992
	5,488,429	01-30-1996	Kojima et al.	348	653	12-31-1992
	5,638,136	06-10-1997	Kojima et al.	348	653	06-07-1995
	5,710,833	01-20-1998	Moghaddam et al.	382	228	04-20-1995
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	H10234004	09-02-1998	Japan			√	
	2003150932	05-23-2003	Japan			√	
	2006163746	06-22-2006	Japan			√	
	2007150601	06-14-2007	Japan			√	
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Doc Code: IDS
Document Description: Information Disclosure Statement filed

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	5,818,975	10-06-1998	Goodwin et al.	382	274	10-28-1996
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	5,852,823	12-22-1998	De Bonet	382	279	10-16-1996
	5,870,138	02-09-1999	Smith et al.	348	143	03-14-1996
	5,911,139	06-08-1999	Jain et al.	1	1	03-28-1997
	5,978,519	11-02-1999	Bollman et al.	382	282	08-06-1996
	5,991,456	11-23-1999	Rahman et al.	382	254	05-29-1996
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	6,097,470	08-01-2000	Buhr et al.	355	38	05-28-1998
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	6,128,397	10-03-2000	Baluja et al.	382	118	11-21-1997
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	2008278466	11-13-2008	Japan			√	
	2009/082814	07-09-2009	World Intellectual Property Organization (WIPO)				√
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	1885911	12-27-2006	China			√	
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Document Description: Information Disclosure Statement filed

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(Sheet 3 of 11)

Docket Number (Optional)	Patent Number
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	6,188,777	02-13-2001	Darrell et al.	382	103	06-22-1998
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	100827846	05-07-2008	Korea, Republic of			√	
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	2370438	06-26-2002	United Kingdom				√

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		CHEN, Longbin, et al., "Face Annotation for Family Photo Album Management," Intl. Journal of Image and Graphics, Vol. 3, No. 1, (2003).
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Document Description: Information Disclosure Statement filed

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(Sheet 4 of 11)

Docket Number (Optional)	Patent Number
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Issue Date	Art Unit
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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
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		CZIRJEK, Csaba, Face Detection and Clustering for Video Indexing Applciations, (2003).

EXAMINER	/B. JAMES PEIKARI/	DATE CONSIDERED	08/12/2021

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Issue Date	Art Unit
January 8, 2019	3992

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
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	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

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EXAMINER	/B. JAMES PEIKARI/	DATE CONSIDERED	08/12/2021

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Document Description: Information Disclosure Statement filed

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INFORMATION DISCLOSURE CITATION IN A PATENT

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Docket Number (Optional)	Patent Number
009379.00008\US	10,176,848
Applicant	
Issue Date	Art Unit
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	7,835,552	11-16-2010	Doi	382	118	03-07-2007
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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
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	2009/0037477	02-05-2009	CHOI et al.	1	1	07-31-2008
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Electronic Acknowledgement Receipt

EFS ID:	42593420
Application Number:	90014641
International Application Number:	
Confirmation Number:	3601
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	10176848
Customer Number:	177632
Filer:	Christopher L. Mckee/Jennifer Hazzard
Filer Authorized By:	Christopher L. Mckee
Attorney Docket Number:	2638-19.06
Receipt Date:	29-APR-2021
Filing Date:	23-DEC-2020
Time Stamp:	15:34:32
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	KUSUMOPUTRO_Benyamin_et_al_Development_of_3D_Face_Databases_by_Using_Merging_a_21209317.PDF	339785 21824d626006f703c8390bc1ad296529c6ab0153	no	7

Warnings:

Information:					
2	Non Patent Literature	LAI_Jian_Huang_et_al_Face_Recognition_Using_Holistic_Fourier_Invariant_Feature_21209325.PDF	1379649 b65ed4a745168ba5a336a593635fcb3f3c3ae60d	no	15
Warnings:					
Information:					
3	Non Patent Literature	LEI_Zhang_et_al_CBIR_Method_Based_on_Color-Spatial_Feature_1999_21209331.PDF	619878 8b0e3b1a0fe096b7f2e6fe777313492d4b0f5e85	no	4
Warnings:					
Information:					
4	Non Patent Literature	LIU_Xiaoming_et_al_Eigenspace_Updating_for_Non-Stationary_Process_and_Its_Appl_21209340.PDF	1129073 962441c8a070f2b364b717de78b817bdc00a238b	no	15
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5	Non Patent Literature	JONES_Michael_et_al_Fast_Multi-view_Face_Detection_Mitsubishi_Electric_Resear_21209347.PDF	684145 c2c30b5aaac9a0be982e8606967f9e667a969c84	no	11
Warnings:					
Information:					
6	Non Patent Literature	MELENCHON_Javier_et_al_Efficiently_Downdating_Composing_and_Splitting_Singula_21209386.PDF	142901 d42ee671c222fca96f8eb5942fd14b3b1b67d1ff	no	2
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7	Non Patent Literature	YANG_Ming-Hsuang_et_al_Detecting_Faces_in_Images__A_Survey_IEEE_Vold_24_No_21209420.PDF	2077629 d182b80eb548161f0e323cd94a6843d45fda3703	no	25
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8	Non Patent Literature	FITZGIBBON_Andrew_et_al_On_Affine_Invariant_Clustering_and_Automatic_Cast_List_21209427.PDF	751386 e4bb1d42e156ac353902e667609f124b1a2b49a0	no	17
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10	Non Patent Literature	TJAHYADI_Ronny_et_al_Application_of_the_DCT_Energy_Histogram_for_Face_Recognit_21209465.PDF	370604 730ec8d7131f8390cc9b4241cc7941d5b0774467	no	7
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11	Non Patent Literature	JEBARA_Tony_S_3D_Pose_Estimation_and_Normalization_for_Face_Recognition_Depar_21211649.PDF	5163789 4b4a77bf3e63f214cf2f067e7dd9b73b8c733ebd	no	138
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12	Non Patent Literature	TURK_Matthew_et_al_Eigenfaces_for_Recognition_Journal_of_Cognitive_Neuroscien_21209472.PDF	2691222 9852d2da99b12c7542d11f1aafdd27778955a818	no	16
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Information:					
13	Non Patent Literature	KANG_Hyunmo_et_al_Visualization_Methods_for_Personal_Photo_Collections__Browsi_21209476.PDF	1627671 0a05dbcc8adf9bddd46f60879d4a85ba9fd19302	no	4
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14	Other Reference-Patent/App/Search documents	US_PROV_60873066_21212451.pdf	3663115 9048c7a13651c6de1221ec7411ae3c488e9b4e16	no	87
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		Total Files Size (in bytes):	21944865		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

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New International Application Filed with the USPTO as a Receiving Office

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Doc Code: IDS
Document Description: Information Disclosure Statement filed

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	Issue Date January 8, 2019	Art Unit 3992

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	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO
	1703694	11-30-2005	China			√	
	101146178	03-19-2008	China			√	
	100827846	05-07-2008	Korea, Republic of			√	
	1020080034248	04-21-2008	Korea, Republic of			√	
	2370438	06-26-2002	United Kingdom				√

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		CHEN, Longbin, et al., "Face Annotation for Family Photo Album Management," Intl. Journal of Image and Graphics, Vol. 3, No. 1, (2003).
		COSTACHE, Gabriel Nicolae, et al., Combining PCA-Based Datasets Without Retraining of the Basis Vector Set, IEEE PC, (Jul. 24, 2997).

EXAMINER	DATE CONSIDERED

Doc Code: IDS
Document Description: Information Disclosure Statement filed

PTO/SB/42 (07-09)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
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37 CFR 1.501 INFORMATION DISCLOSURE CITATION IN A PATENT (Sheet 4 of 11)	Docket Number (Optional) 009379.00008\US	Patent Number 10,176,848
	Applicant	
	Issue Date January 8, 2019	Art Unit 3992

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6,407,777	06-18-2002	DeLuca	348	576	10-09-1997
	6,421,468	07-16-2002	Ratnakar et al.	382	254	01-06-1999
	6,438,264	08-20-2002	Gallagher et al.	382	167	12-31-1998
	6,456,732	09-24-2002	Kimbell et al.	382	112	09-11-1998
	6,459,436	10-01-2002	Kumada et al.	345	590	11-10-1999
	6,473,199	10-29-2002	Gilman et al.	358	1.9	12-18-1998
	6,501,857	12-31-2002	Gotsman et al.	382	224	07-20-1999
	6,502,107	12-31-2002	Nishida	1	1	05-05-2000
	6,504,942	01-07-2003	Hong et al.	382	103	01-13-1999
	6,504,951	01-07-2003	Luo et al.	382	165	11-29-1999
	6,516,154	02-04-2003	Parulski et al.	396	287	07-17-2001
	6,526,161	02-25-2003	Yan	382	118	08-30-1999

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	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

		BEYMER, David, Pose-Invariant face Recognition Using Real and Virtual Views, Massachusetts Institute of Technology Artificial Intelligence Laboratory, A.I. Technical Report No. 1574, Mar. 1996.
		CZIRJEK, Csaba, Face Detection and Clustering for Video Indexing Applciations, (2003).

EXAMINER	DATE CONSIDERED

Doc Code: IDS
Document Description: Information Disclosure Statement filed

PTO/SB/42 (07-09)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

37 CFR 1.501 INFORMATION DISCLOSURE CITATION IN A PATENT (Sheet 5 of 11)	Docket Number (Optional) 009379.00008\US	Patent Number 10,176,848
	Applicant	
	Issue Date January 8, 2019	Art Unit 3992

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6,564,225	05-13-2003	Brogliatti et al.	1	1	07-14-2000
	6,567,983	05-20-2003	Shiimori	725	105	04-12-1999
	6,810,149	10-26-2004	Squilla et al.	382	224	08-17-2000
	7,522,773	04-21-2009	Gallagher et al.	382	224	04-28-2005
	7,551,755	06-23-2009	Steinberg et al.	382	118	01-22-2004
	7,555,148	06-30-2009	Steinberg et al.	382	118	01-22-2004
	7,587,068	09-08-2009	Steinberg et al.	382	118	01-22-2004
	7,711,241	05-04-2010	Mori et al.	386	285	11-18-2003
	7,760,917	07-20-2010	Vanhoucke et al.	382	115	07-12-2007
	7,783,085	08-24-2010	Perlmutter et al.	382	118	05-10-2006
	7,787,697	08-31-2010	Ritzau et al.	382	224	06-09-2006
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	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

		KUCHINSKY, Allan, et al., FotoFile: A Consumer Multimedia Organization and Retrieval System, (May 1999).
		HALL, Peter et al., "Adding and Subtracting Eigenspaces," Proc. Of the British Machine Vision Conf. XX, XX. vol. 2, pp. 453-462. (1999).

EXAMINER	DATE CONSIDERED

Doc Code: IDS
Document Description: Information Disclosure Statement filed

PTO/SB/42 (07-09)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
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37 CFR 1.501 INFORMATION DISCLOSURE CITATION IN A PATENT (Sheet 6 of 11)	Docket Number (Optional) 009379.00008\US	Patent Number 10,176,848
	Applicant	
	Issue Date January 8, 2019	Art Unit 3992

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	7,835,552	11-16-2010	Doi	382	118	03-07-2007
	7,847,815	12-07-2010	Patel et al.	348	14.08	10-11-2006
	7,860,854	12-28-2010	Lipson et al.	707	707	01-29-2004
	7,881,505	02-01-2011	Schneiderman et al.	382	118	09-29-2006
	7,991,714	08-02-2011	Widrow et al.	706	18	02-15-2008
	8,024,343	09-20-2011	Gallagher	707	737	04-07-2006
	8,036,430	10-11-2011	Tokuse	382	112	01-29-2008
	8,103,062	01-24-2012	Abe et al.	382	118	08-23-2006
	8,185,543	05-22-2012	Choudhry et al.	707	767	11-10-2005
	8,243,118	08-14-2012	Pace	348	14.01	01-04-2008
	8,248,489	08-21-2012	Ejima et al.	348	239	04-12-2007
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FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

		HALL, Peter et al., "Merging and Splitting Eigenspace Models," IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 22, No. 9, pp. 1042-1049, (September 2000).
		HUANG, Jing, et al., Image Indexing Using Color Correlograms, IEEE Conf. Computer Vision and Pattern Recognition, (1997).

EXAMINER	DATE CONSIDERED

Doc Code: IDS
Document Description: Information Disclosure Statement filed

PTO/SB/42 (07-09)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
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37 CFR 1.501
INFORMATION DISCLOSURE CITATION IN A PATENT

(Sheet 7 of 11)

Docket Number (Optional)	Patent Number
009379.00008\US	10,176,848
Applicant	
Issue Date	Art Unit
January 8, 2019	3992

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
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	8,384,791	02-26-2013	Porter et al.	348	222.1	11-28-2003
	8,385,607	02-26-2013	Okada	382	118	10-09-2007
	8,396,262	03-12-2013	Aisaka et al.	382	118	03-17-2008
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	8,548,244	10-01-2013	Conradt et al.	382	181	03-22-2012
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	8,781,178	07-15-2014	Nagaoka et al.	382	118	08-17-2010
	9,639,740	05-02-2017	Ganong et al.	1	1	11-12-2013
	9,665,597	05-30-2017	Haitani et al.	1	1	03-22-2007
	RE31370	09-06-1983	Mashimo et al.	396	110	09-05-1979
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FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

		ZHANG, Jun, et al., Face Recognition: Eigenface, Elastic Matching, and Neural Nets, Proceedings of the IEEE, Vol. 85, No. 9, pp. 1423-1435, (September 1997).
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EXAMINER	DATE CONSIDERED

Doc Code: IDS
Document Description: Information Disclosure Statement filed

PTO/SB/42 (07-09)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
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37 CFR 1.501 INFORMATION DISCLOSURE CITATION IN A PATENT (Sheet 8 of 11)	Docket Number (Optional) 009379.00008\US	Patent Number 10,176,848
	Applicant	
	Issue Date January 8, 2019	Art Unit 3992

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	8,125,509	02-28-2012	Kenoyer	348	14.08	01-19-2007
	8,208,764	06-26-2012	Guckenberger	382	305	01-19-2007
	8,897,508	11-25-2014	Adam et al.	382	118	12-17-2012
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	2001/0043727	11-22-2001	COOPER	382	118	09-30-1998
	2002/0015514	02-07-2002	Kinjo	382	118	04-13-2001
	2002/0105662	08-08-2002	Patton et al.	358	1.9	03-26-2002
	2002/0114535	08-22-2002	Luo	382	282	12-14-2000
	2002/0168108	11-14-2002	Loui et al.	382	190	03-28-2001
	2002/0172419	11-21-2002	Lin et al.	382	167	05-15-2001
	2003/0019665	01-30-2003	Horton	175	293	07-26-2001
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	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

		LEI, Zhang, et al., A CBIR Method Based on Color-Spatial Feature, (1999).
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EXAMINER	DATE CONSIDERED

Doc Code: IDS
Document Description: Information Disclosure Statement filed

PTO/SB/42 (07-09)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
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37 CFR 1.501 INFORMATION DISCLOSURE CITATION IN A PATENT (Sheet 9 of 11)	Docket Number (Optional) 009379.00008\US	Patent Number 10,176,848
	Applicant	
	Issue Date January 8, 2019	Art Unit 3992

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2003/0048950	03-13-2003	Savakis et al.	382	225	05-23-2001
	2003/0052991	03-20-2003	Stavely et al.	348	370	09-17-2001
	2003/0059107	03-27-2003	Sun et al.	382	165	09-04-2001
	2003/0059121	03-27-2003	Savakis et al.	382	239	07-23-2001
	2003/0084065	05-01-2003	Lin et al.	1	1	10-31-2001
	2003/0210808	11-13-2003	Chen et al.	382	118	05-10-2002
	2005/0105806	05-19-2005	Nagaoka et al.	382	224	12-15-2003
	2006/0044446	03-02-2006	Porter et al.	348	333.11	11-28-2003
	2006/0204034	09-14-2006	Steinberg et al.	382	103	06-26-2003
	2007/0171796	07-26-2007	Tokuyama	369	53.15	01-11-2007
	2008/0199056	08-21-2008	TOKUSE	382	118	01-29-2008
	2008/0232651	09-25-2008	WOO	382	118	03-20-2008

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	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

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		MELENCHÓN, Javier, et al., Efficiently Downdating, Composing and Splitting Singular Value Decompositions Preserving the Mean Information, Pattern Recognition and Image Analysis, Vol. 4478, pp. 436-443.
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EXAMINER	DATE CONSIDERED

Doc Code: IDS
Document Description: Information Disclosure Statement filed

PTO/SB/42 (07-09)
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U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
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37 CFR 1.501 INFORMATION DISCLOSURE CITATION IN A PATENT (Sheet 10 of 11)	Docket Number (Optional) 009379.00008\US	Patent Number 10,176,848
	Applicant	
	Issue Date January 8, 2019	Art Unit 3992

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2009/0002479	01-01-2009	Sangberg et al.	348	14.02	06-29-2007
	2009/0006482	01-01-2009	Nomoto	1	1	08-19-2008
	2009/0034805	02-05-2009	Perlmutter et al.	382	118	05-10-2006
	2009/0037477	02-05-2009	CHOI et al.	1	1	07-31-2008
	2011/0055766	03-03-2011	Ogawa et al.	715	838	11-10-2010
	2014/0079299	03-20-2014	Sukegawa et al.	382	118	09-13-2013

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	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

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		STRICKER, Markus, et al., Similarity of Color Images, SPIE Proc., p. 2420, 12 pgs., (1995).
		JEBARA, Tony, S., 3D Pose Estimation and Normalization for Face Recognition, Department of Electrical Engineering, McGill University, (May 1996).

EXAMINER	DATE CONSIDERED

Doc Code: IDS
Document Description: Information Disclosure Statement filed

PTO/SB/42 (07-09)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
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37 CFR 1.501 INFORMATION DISCLOSURE CITATION IN A PATENT

(Sheet 11 **of** 11 **)**

Docket Number (Optional)	Patent Number
009379.00008\US	10,176,848
Applicant	
Issue Date: January 8, 2019	Art Unit: 3992

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

		TURK, Matthew, et al., Eigenfaces for Recognition, Journal of Cognitive Neuroscience, 3(1), (1991).
		U.S. Provisional Application No. 60/873,066, filed December 5, 2006

EXAMINER	DATE CONSIDERED

Docket No.: 009379.00008\US
(*EX PARTE* REEXAMINATION)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re *Ex parte* Reexamination of:
U.S. Patent No.: 10,176,848

Examiner: Peikari, Behzad

Control No.: 90/014,641

Group Art Unit: 3992

Inventor: Mari Yoshida

Confirmation No.: 3601

Application Serial No.: 14/478,020
Filed: September 5, 2014
Issue Date: January 8, 2019

For: Recording and Reproducing Apparatus and Method Thereof

NOTICE OF PRIOR AND CONCURRENT PROCEEDINGS, AND INFORMATION DISCLOSURE STATEMENT

Mail Stop *Ex Parte* Reexam
ATTN: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. § 1.565, Patent Owner hereby provides notice of proceedings involving the subject '848 patent, both prior and concurrent. Further, pursuant to 37 C.F.R. § 1.555, the attention of the Office is hereby directed to the references listed in the attached Form PTO/SB/42. The listed references are references not yet of record in this proceeding (e.g., as cited by Requester), or included among the "References Cited" on the subject patent. Pursuant to 37 C.F.R. § 1.98, copies of those of the listed references that are neither U.S. patents nor published applications are enclosed.

The listed references were cited in documents from related proceedings, as identified below. Except as otherwise indicated, copies of the citing documents are not included, due to their voluminous and non-material argumentative nature (e.g., third party invalidity contentions).

This is believed to be consistent with MPEP 2282 addressing the notification requirement for prior and concurrent proceedings and providing that "papers filed in the court from litigations or other proceedings involving the patent will not be entered into the record (and will be expunged if already entered) if they provide a party's arguments."

I. USPTO Proceedings

A. *Apple Inc. v. Maxell*, Ltd., IPR2021-00367.

1. Status: proceeding terminated pre-institution; joint motion to terminate filed April 8, 2021, pursuant to settlement agreement between the parties entered into on March 22, 2021. Joint motion granted and proceedings terminated by Board Decision entered April 9, 2021.

B. Application No. 12/430,185 (parent), now US 9,159,368.

C. Application No. 15/898,351 (child).

D. Application No. 16/218,644 (child), now US 10,418,069.

II. District Court and ITC Proceedings

A. *Maxell, Ltd. v. Apple Inc.*, 6-20-cv-00646 (WDTX).

1. Status: joint motion to dismiss filed March 24, 2021 pursuant to settlement agreement between the parties entered into on March 22, 2021. Joint motion to dismiss granted April 1, 2021 (case dismissed).

B. *In the Matter of: Certain Mobile Electronic Devices and Laptop Computers*, Investigation No. ITC-337-TA-1215.

1. Status: joint motion to terminate filed March 24, 2021 pursuant to settlement agreement between the parties (Complainant Maxell, Ltd. and Respondent Apple Inc.) entered into on March 22, 2021. Initial Determination Granting Joint Motion to Terminate Investigation Based on Settlement entered March 29, 2021.

2. Respondent Apple Inc.'s Disclosure of Invalidity Contentions served November 2, 2020.

3. Respondent Apple Inc.'s Disclosure of Second Supplemental Invalidity Contentions served January 21, 2021.

Samsung - Exhibit 1004 - Page 192

III. Corresponding Foreign Applications/Patents[1]

A. Japanese Patent No. 4960301 [Japanese Patent Application No. 2008-130678].

B. Japanese Patent No. 5352697 [Japanese Patent Application No. 2012-063504].

C. Japanese Patent No. 5346140 [Japanese Patent Application No. 2013-137768].

D. Japanese Patent No. 5785230 [Japanese Patent Application No. 2013-168836].

E. Japanese Patent No. 5951061 [Japanese Patent Application No. 2015-040089].

F. Japanese Patent No. 6150919 [Japanese Patent Application No. 2016-043206].

G. Chinese Patent No. 101588450 [Chinese Patent Application No. 200910118367].

H. Chinese Patent No. 103475837 [Chinese Patent Application No. 201310293822].

I. Chinese Patent No. 103402070 [Chinese Patent Application No. 201310294338].

Patent Owner submits this information so that the Office may determine any materiality thereof to the claimed invention. It is respectfully requested that the listed references be formally considered during this reexamination and be made of record herein.

Respectfully submitted,

By: /Scott M Kelly/
Scott M. Kelly
Registration No. 65,121

BANNER & WITCOFF, LTD
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(202) 824-3000
(202) 824-3001 Fax

Dated: April 29, 2021

[1] As shown on Espacenet and/or JPO websites.

Samsung - Exhibit 1004 - Page 193

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and accurate copy of the foregoing NOTICE OF CONCURRENT PROCEEDINGS, AND INFORMATION DISCLOSURE STATEMENT, including submitted references (provided on USB flash drive), is being served in its entirety via First Class Mail, postage prepaid, on the following counsel of record:

Adam P. Seitz & Jennifer C. Bailey
ERISE IP, P.A.
7015 College Boulevard, Suite 700
Overland Park, Kansas 66211

on this 29th day of April, 2021.

/Jennifer Hazzard/
Jennifer Hazzard

Samsung - Exhibit 1004 - Page 194

Docket No.: 009379.00008\US
(*EX PARTE* REEXAMINATION)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re *Ex parte* Reexamination of:
U.S. Patent No.: 10,176,848

Examiner: Peikari, Behzad

Control No.: 90/014,641

Group Art Unit: 3992

Inventor: Mari Yoshida

Confirmation No.: 3601

Application Serial No.: 14/478,020
Filed: September 5, 2014
Issue Date: January 8, 2019

For: Recording and Reproducing Apparatus and Method Thereof

WAIVER OF OPTIONAL PATENT OWNER STATEMENT

Mail Stop *Ex Parte* Reexam
ATTN: Central Reexamination unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Patent Owner acknowledges with appreciation the Office's grant of a one-month extension of time for filing a Patent Owner Statement in this reexamination proceeding (decision entered March 29, 2021, extending deadline to April 29, 2021). The extension of time was sought in good faith with the intent to obtain additional time reasonably required for preparing and filing a Statement in the circumstances described in the petition filed by Patent Owner.

On further consideration and in view of present circumstances, Patent Owner has decided to waive the Statement, opting instead to await a first Office action to see what if any issues need to be addressed at that stage. Patent Owner is grateful to the Office for its prompt consideration and grant of the requested additional time, which afforded Patent Owner the time necessary for it to fully consider this matter.

Patent Owner is concurrently filing herewith a Notice of Prior and Concurrent Proceedings, and Information Disclosure Statement. This reexamination is ready to proceed to first action.

Respectfully submitted,

By: /Scott M Kelly/
Scott M. Kelly
Registration No. 65,121

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Dated: April 29, 2021

Samsung - Exhibit 1004 - Page 196

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and accurate copy of the foregoing WAIVER OF OPTIONAL PATENT OWNER STATEMENT is being served in its entirety via First Class Mail, postage prepaid, on the following counsel of record:

Adam P. Seitz & Jennifer C. Bailey
ERISE IP, P.A.
7015 College Boulevard, Suite 700
Overland Park, Kansas 66211

on this 29th day of April, 2021.

/Jennifer Hazzard/
Jennifer Hazzard

Samsung - Exhibit 1004 - Page 197

Electronic Acknowledgement Receipt

EFS ID:	42592524
Application Number:	90014641
International Application Number:	
Confirmation Number:	3601
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	10176848
Customer Number:	177632
Filer:	Christopher L. Mckee/Jennifer Hazzard
Filer Authorized By:	Christopher L. Mckee
Attorney Docket Number:	2638-19.06
Receipt Date:	29-APR-2021
Filing Date:	23-DEC-2020
Time Stamp:	15:25:46
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Foreign Reference	JPH10234004A_21211417.pdf	519777 785b8a79e3ed05a9de1a05b8f22ef070238a1584	no	11

Warnings:

Information:					
2	Foreign Reference	Translation_of_JPH10234004A_21211428.pdf	311502 40de4bf28fcb47b67e60b10b983e08cb73b72747	no	11
Warnings:					
Information:					
3	Foreign Reference	JP2003150932A_21211433.pdf	729749 6bedb58ae43e43d87e1938dc19e0ffde729ed4de	no	13
Warnings:					
Information:					
4	Foreign Reference	Translation_of_JP2003150932A_21211439.pdf	332384 8b2c4509670eaa59a027f01437d089c56e4d988e	no	15
Warnings:					
Information:					
5	Foreign Reference	JP2006163746A_21211442.pdf	1690869 00700c794c5eeece11e0b2ec998be26a56106ccf	no	33
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6	Foreign Reference	Translation_of_JP2006163746A_21211456.pdf	479726 c1a7d7d0c0476004d79f71bc551ee0361040d414	no	35
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7	Foreign Reference	JP2007150601A_21211465.pdf	1112280 5e194460f4531666a7df1694700cf96c573180eb	no	23
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8	Foreign Reference	Translation_of_JP2007150601A_21211473.pdf	405161 f0c5c4c72cde69203889b3d15c669a857edcd725	no	24
Warnings:					
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9	Foreign Reference	JP2007310813A_21211479.pdf	589539 3109e2f96cc9a2b4da4cdd0224a18bf26098173e	no	13
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11	Foreign Reference	JP2008278466A_21211499.pdf	922693 fe4e185ed8cf52d5b9ddaf7dd7bcb6a1c81e7ab0	no	19
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13	Foreign Reference	WO2009082814A1_21211515.pdf	3063790 5dc7cfa4bd6bea18bda91d16b38d833b2df6357f	no	63
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14	Foreign Reference	WO2005074275A1_21211519.pdf	4573964 009eb28f2d0dd6cf4bb1a029e16bb854a7ad26de	no	117
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15	Foreign Reference	Translation_of_WO2005074275A1_21211526.pdf	608956 b56619b1f7173e5a5fc11926fa6e484af3cb3ddd	no	65
Warnings:					
Information:					

16	Foreign Reference	CN1885911A_21211530.pdf	1590778 88e7788c62f6607508dd430de9dcf5801428db7d	no	30
Warnings:					
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17	Foreign Reference	Translation_of_CN1885911A_21211535.pdf	376852 095906fbcd6d9e227e67cf53290b8a938c6b601f	no	23
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Information:					
18	Foreign Reference	CN101051389A_21211540.pdf	1010599 7a1fbdcb5ef0dac8528fb13b42ac5cc2df493792	no	20
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19	Foreign Reference	Translation_of_CN101051389A_21211544.pdf	346595 7d6437f02d75b9ae851be9c3579120fce0fc3f0c	no	16
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20	Foreign Reference	CN1703694A_21211568.pdf	1497794 54433d7c6e24239a8a970c92955623b099455585	no	28
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21	Foreign Reference	Translation_of_CN1703694A_21211573.pdf	380577 f3fb2c97d7811925c9011c7f5785007ff7d1f635	no	18
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22	Foreign Reference	CN101146178A_21211579.pdf	7708419 2a138df6808786f4e3313365b56c02d188a17736	no	155
Warnings:					
Information:					

23	Foreign Reference	Translation_of_CN101146178A_21211589.pdf	742906 dc81e3c5b04d365a95c258eeeb772057a8815dc2	no	91
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24	Foreign Reference	KR100827846B1_21211593.pdf	1005704 100282780b86e959072f7073c9f603f7decbb2ad	no	21
Warnings:					
Information:					
25	Foreign Reference	Translation_of_KR100827846B1_21211598.pdf	369203 187345b3680c6d7d546bf5db5184728037ccddc1	no	16
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Information:					
26	Foreign Reference	KR_1020060100224_A_21211605.PDF	348668 2753ceb1496fb280545bea14839e848a878b1c0b	no	9
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Information:					
27	Foreign Reference	KR_1020060100224_A_-_English_Translation_21211604.PDF	785012 f780c5bcd782068ba090493313923b9aae872156	no	10
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Information:					
28	Foreign Reference	GB2370438A_21211603.pdf	2233472 b8c2fdba12012e09e5b119bd2dd5295ae0559b2f	no	59
Warnings:					
Information:					
29	Non Patent Literature	GIRGENSOHN_Andreas_et_al_Simplifying_the_Management_of_Large_Photo_Collections_21208930.PDF	1787409 e1d30c6e1a3e650501650a4d8bdd457a357f5079	no	8
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30	Non Patent Literature	ASKEY_Phil_Adobe_Photoshop_Album_10_Review_January_2003_https___wwwdpreview_21208933.PDF	1101359 57173b80d16a43968b2f14fddb0638caf3d6abd5	no	7
Warnings:					
Information:					
31	Non Patent Literature	SHAH_Agam__CES__Digital_Imaging_Market_Set_to_Explode_panel_says__The_Industry_21208935.PDF	3430865 bb66b82b1efcc97599f54be1b99411e016c745c6	no	7
Warnings:					
Information:					
32	Non Patent Literature	LATIF_Khalid_et_al_An_Approach_for_a_Personal_Information_Management_System_fo_21208939.PDF	894213 3b829e21f858946e7395b293827f29d311fe7387	no	11
Warnings:					
Information:					
33	Non Patent Literature	WALLICK_Michael_N_Automatic_Organization_of_Large_Photo_Collections_PhD_diss_21208942.PDF	7104271 aa5981ee7587fa6428a923742543080 39dd7871c	no	120
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Information:					
34	Non Patent Literature	CHANG_Tianhorng_et_al__Texture_Analysis_and_Classification_with_Tree-Structure_21208943.PDF	1267645 379d7a4121d812952cacb5f38da9f4797f2cc94b	no	13
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Information:					
35	Non Patent Literature	CHEN_Longbin_et_al__Face_Annotation_for_Family_Photo_Album_Management__Intl__21208945.PDF	1559919 84a8605a4733212f475bd78018f4f7819c493cc1	no	14
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Information:					
36	Non Patent Literature	CORCORAN_Peter_et_al__Automated_Sorting_of_Consumer_Image_Collections_Using_Fac_21208947.PDF	609590 4eb56ee414eda94aa1fdf80a95e3b30cd3e3092a	no	8
Warnings:					
Information:					

37	Non Patent Literature	COSTACHE_Gabriel_Nicolae_et_al_Combining_PCA-Based_Datasets_Without_Retraining_21208948.PDF	483381 3df67e6052f9f27af2db7561b5fdb55d6ba09ec8	no	7
Warnings:					
Information:					
38	Non Patent Literature	CUI_Jingyu_et_al_EasyAlbum__An_Interactive_Photo_Annotation_System_Based_on_Fa_21208978.PDF	1552496 96fad87a6233c92be6b9289377599ac1ebd5cc2c	no	11
Warnings:					
Information:					
39	Non Patent Literature	CZIRJEK_Csaba_Face_Detection_and_Clustering_for_Video_Indexing_Applciations_20_21208991.PDF	591797 7e482e8da6c686b10d996621f48e10c1811bfcf5	no	7
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40	Non Patent Literature	BEYMER_David_Pose-Invariant_face_Recognition_Using_Real_and_Virtual_Views_Massa_21208987.PDF	2988865 452cb1291f1b3fd585995023ecf38c66f84e1f8d	no	186
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Information:					
41	Non Patent Literature	KUCHINSKY_Allan_et_al_FotoFile__A_Consumer_Multimedia_Organization_and_Retriev_21208992.PDF	1572396 5127456dc25d1a4a9a383014ef40cd8c269f3e39	no	8
Warnings:					
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42	Non Patent Literature	HALL_Peter_et_al_Adding_and_Subtracting_Eigenspaces_with_EigenValue_Decompositi_21209000.PDF	416068 66014e92a7fe00bbd42dcc4311a92c468ca6e25a	no	8
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Information:					
43	Non Patent Literature	HALL_Peter_et_al__Adding_and_Subtracting_Eigenspaces__Proc_Of_the_British_Mac_21208993.PDF	298702 10bbc7d3002dab54237ca9af13126c238959a648	no	11
Warnings:					
Information:					

44	Non Patent Literature	HALL_Peter_et_al__Merging_and_Splitting_Eigenspace_Models__IEEE_Transactions_o_21209007.PDF	290581 a5666fedd2a909d323006d23fea0fd3d24c4b495	no	8
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Information:					
45	Non Patent Literature	HALL_Peter_et_al_Incremental_Eigenanalysis_for_Classification_British_Machine__21209013.PDF	378627 799e4c9efca5e5d8ae917c1ac9c299b7545add76	no	14
Warnings:					
Information:					
46	Non Patent Literature	HUANG_Jing_et_al_Image_Indexing_Using_Color_Correlograms_IEEE_Conf_Computer__21209029.PDF	209515 521823cf0856fab4465be454f87d65eca4bbbbea	no	7
Warnings:					
Information:					
47	Non Patent Literature	ZHANG_Jun_et_al_Face_Recognition__Eigenface_Elastic_Matching_and_Neural_Nets_21209309.PDF	373034 7a1707519a7429ad88c28e1928a7ecaed376fb9f	no	13
Warnings:					
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48	Information Disclosure Statement (IDS) Form (SB08)	PTO_SB_42_21213351.pdf	96730 47979ef9745916fc82fe401ea7dd23ddc5bb17d3	no	11
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Information:					
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49		Notice_of_Concurrent_Proceedings_and_IDS_00008_21213353.pdf	30725 e60aad6670fe27d532625117b3e354a3204771bb	yes	4

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50		Waiver_of_Optional_Patent_Owner_Statement_009379_21213350.pdf	22005 6a63663b7a96b822f79f2d4a9bb8f0de247bcfe4	yes	3

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Espacenet

Bibliographic data: JPH10234004 (A) — 1998-09-02

TIME-VARYING IMAGE DISPLAY DEVICE AND DISPLAY METHOD

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Applicant(s): TOSHIBA CORP ± (TOSHIBA CORP)

Classification: **- international:** ***G06T1/00; G06T13/00; G06T13/80; G06T7/20; H04N5/76; H04N5/91; H04N5/93;*** (IPC1-7): G06T1/00; G06T13/00; G06T7/20; H04N5/76; H04N5/93

- cooperative:

Application number: JP19970033490 19970218

Priority number (s): JP19970033490 19970218

Also published as: JP3315888 (B2)

Abstract of JPH10234004 (A)

PROBLEM TO BE SOLVED: To confirm a person and to retrieve it quickly by extracting a time- varying image as a plurality of still images, classifying the images for each shot, discriminating whether or not a face is in existence in each shot, counting the number of times of appearance and generating a video appearance list. SOLUTION: A still image extract means 1 extracts a received time-varying image as a plurality of still images, an image consecutive classification means 2 classifies the extracted consecutive still images for each shot in the unit of a prescribed number. A face video image discrimination means 3 discriminates whether or not a human face is picked up for each shot classified by the image consecutive classification means 2, and in the case that the presence of the face is discriminated, a face existence discrimination means 4 discriminates whether or not the face has already been picked up in the time-varying image for a prescribed length, and a face classification count means 5 counts the number of times of appearance of each face. Based on the result, a characters list generating means 6 generates a characters list of the time-varying image based on the

result and provides an output of it as characters data and the characters list is displayed on a display means 7.

(19)日本国特許庁（ＪＰ）　(12) **公開特許公報（Ａ）**　(11)特許出願公開番号

特開平10－234004

(43)公開日　平成10年(1998)９月２日

(51)Int.Cl.[6]	識別記号	ＦＩ	
Ｈ０４Ｎ　5/93		Ｈ０４Ｎ　5/93	Ｚ
Ｇ０６Ｔ　13/00		5/76	Ａ
1/00		Ｇ０６Ｆ　15/62	３４０Ａ
7/20			３８０
Ｈ０４Ｎ　5/76		15/70	４１０

審査請求　未請求　請求項の数７　ＯＬ　（全　９　頁）

(21)出願番号　特願平9－33490

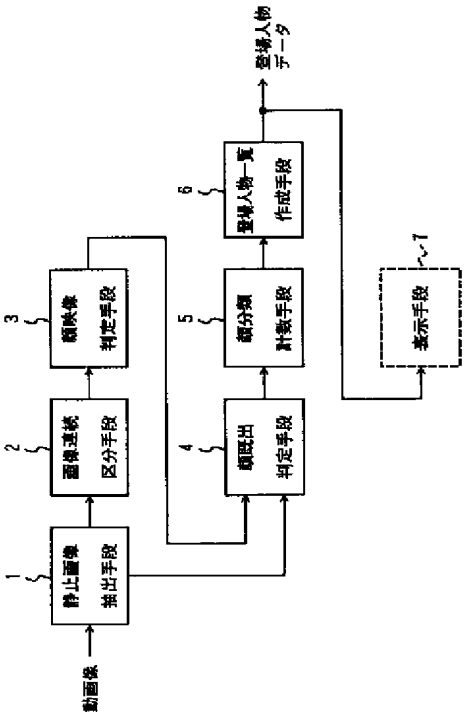
(22)出願日　平成９年(1997)２月18日

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最終頁に続く

(54)【発明の名称】　動画像表示装置および表示方法

(57)【要約】
【課題】　視聴の対象となるディジタル動画像データを構造化して表示することにより映像の全体像を把握し易くし、動画像の内容検索の迅速化を図る。
【解決手段】　入力された動画像を静止画像として抽出する静止画像抽出手段１と、抽出された静止画像を所定単位のショット毎に区分する画像区分手段２と、区分手段２によって区分された各ショット毎に所定の映像が撮影されているか否かを判定する所定映像判定手段３と、各ショットに所定の映像が存在すると判定された場合にこの所定の映像がこの動画像の中に既に撮影されているか否かを判定する所定映像既出判定手段４と、異なる所定の映像毎に分類すると共にこの動画像における各所定の映像の登場回数を計数する所定映像分類計数手段５と、分類された前記各所定の映像と計数された前記各所定の映像の登場回数に基づいて前記動画像の映像登場一覧を作成する映像登場一覧作成手段６と、を備える。



【特許請求の範囲】
【請求項１】入力された動画像を複数枚の静止画像として抽出する静止画像抽出手段と、
抽出された前記静止画像を１枚または任意の枚数の画像よりなるショット毎に区分する画像区分手段と、
前記画像区分手段によって区分された各ショット毎に所定の映像が撮影されているか否かを判定する所定映像判定手段と、
前記各ショットの中に所定の映像が存在すると判定された場合に、この所定の映像が前記動画像の中の何れかに既に撮影されているか否かを判定する所定映像既出判定手段と、
前記所定の映像を異なる映像毎に分類すると共に、前記動画像における各所定の映像の登場回数を計数する所定映像分類計数手段と、
分類された前記各所定の映像と計数された前記各所定の映像の登場回数に基づいて、前記動画像の映像登場一覧を作成する映像登場一覧作成手段と、
を備えることを特徴とする動画像表示装置。
【請求項２】前記映像登場一覧作成手段としての登場人物一覧作成手段は、登場人物一覧表示を行なう際には登場回数順に並べ替えて出力すると共に、この並べ替えが行なわれて出力された登場人物一覧を表示する表示手段をさらに備えることを特徴とする請求項１に記載の動画像表示装置。
【請求項３】前記画面区分手段としての場面分割部を用いた場面分割により分断された所定単位の映像場面毎に、この場面内から１枚の静止画を選び出す代表フレーム選択部と、上記映像登場一覧としての登場人物一覧を表示する際に、該登場人物が登場した映像場面の代表フレームを関連付けて、一覧表示画面に同時に表示する表示部と、を備えることを特徴とする請求項１に記載の動画像表示装置。
【請求項４】前記表示部に表示された前記一覧表示画面上の前記代表フレームを、利用者が操作・指示することにより、この代表フレームが代表する所定単位の場面から直接動画像を再生することができる入力操作部を備えることを特徴とする請求項３に記載の動画像表示装置。
【請求項５】所定の時間的な長さを有して入力された動画像を連続する静止画像として抽出すると共に、連続する静止画像を時間軸上の所定単位に区分するステップと、
前記区分された所定単位の静止画像に人物の顔が含まれるか否かを判断するステップと、
その所定単位の静止画像中に顔が含まれているものと判断された場合に、その顔が始めてのものであるときに１つの項目として分類するステップと、
前記所定単位の静止画像中に含まれていた顔が既に分類されて登録されている場合に、分類された顔の登場回数を１つ加算するステップと、
全ての所定単位の静止画像群について顔の抽出動作を行なってその動画像における登場人物一覧を作成するステップと、
を備えることを特徴とする動画像表示方法。
【請求項６】前記連続する静止画像を時間軸上の所定単位に区分するステップにおいて、その所定単位が表現している場面の代表的な画像を代表フレームとして抽出・作成するステップを更に含むことを特徴とする請求項５に記載の動画像表示方法。
【請求項７】前記登場人物を作成するステップの前に、全ての所定単位についての処理が行なわれたか否かを判断するステップが設けられていることを特徴とする請求項５に記載の動画像表示方法。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は動画像表示装置および表示方法に係り、特に所定の長さの動画像をシーンの変化等に応じて複数の場面に区分し、その場面中に登場する人物の所定の映像を登場回数と共に分類することができるようにした動画像表示装置および表示方法に関する。
【０００２】
【従来の技術】近年の衛星放送、ケーブルテレビジョン放送の普及などに伴い、一般家庭においても視聴可能な映像チャンネル数は増加の一途をたどっている。また、従来のビデオテープやレーザーディスクなどの映像記録媒体に加えて、映像や音声の情報をディジタルデータとして記録再生できるＤＶＤ（Digital Versatile Disc）も１９９６年には製品化され、一般的なユーザが大量の映像メディアにアクセスできる環境は充実しつつあるといってよい。
【０００３】その一方で、それら大量の映像の中からユーザがアクセスしたいと望んでいる目的の映像に効率よくアクセスできる技術の提供は従前のままである。例えば、テレビの視聴者は、新聞などに掲載される番組欄を参照してみたい映像（番組）を選択したり、ビデオソフトパッケージを購入しようとする消費者はパッケージに記載されているタイトルや出演者、あらすじなどを参照して希望のビデオを選択する。これらは文字による映像情報のテキスト記述であるが、映像のすべてに対して記述がなされているわけでもなく、そのようにすべてに対して記述をすることは大変な手間と時間を要するものとなる。
【０００４】また、映像中のどの部分をみたいか、という要求はユーザの個々によって当然異なっているはずなので、すべてのユーザに対して適用可能なテキスト記述を作成することは不可能であり、また、もし作成できたとしても付加情報量の増大を招くために、主として放送メディアなどの供給できる情報量に限界があるソースにおいては実用化が難しいものとなる。このため、テレビ

視聴者はニュース番組中の特定の話題だけを視聴したい場合であっても、番組の最初からテレビをスイッチオンしたままの状態で、自分が視聴したい話題が放映されるまで待ち続けなければならなかったり、別のニュース番組で視聴した話題も繰り返し見させられたりして、著しく時間の無駄となっている。

【０００５】このように、情報メディアが飛躍的に進歩しても映像アクセス環境が貧弱なままでは、近い将来、ユーザが大量の映像情報にアクセスできる状況が実現した場合でも、その情報量をスムーズに享受できるとはいえず、かえって情報量の多さに混乱するユーザが増える懸念もある。

【０００６】

【発明が解決しようとする課題】本発明はユーザがディジタル映像を視聴する際に、その映像データを構造化して表示することによって、ユーザが今見ている映像の全体像をつかみやすくすることを目的とする。

【０００７】また、動画像に表現されている映像内容を解析して映像中の顔領域を辞書により比較して判定し、登場人物毎に登場回数を分類・計数することにより動画像中に現れる人物を確認でき、迅速な検索を図ることを目的としている。

【０００８】

【課題を解決するための手段】上記目的を達成するため、請求項１に係る動画像表示装置は、入力された動画像を複数枚の静止画像として抽出する静止画像抽出手段と、抽出された前記静止画像を１枚または任意の枚数よりなるショット毎に区分する画像区分手段と、前記画像区分手段によって区分された各ショット毎に顔が撮影されているか否かを判定する所定映像判定手段と、前記各ショットに顔が存在すると判定された場合にこの顔が前記動画像の中に既に撮影されているか否かを判定する所定映像既出判定手段と、前記所定の英層を異なる映像毎に分類すると共に前記動画像における各顔の登場回数を計数する所定映像分類計数手段と、分類された前記各顔と計数された前記各顔の登場回数に基づいて、前記動画像の映像登場一覧を作成する映像登場一覧作成手段と、を備えることを特徴としている。

【０００９】請求項２に係る動画像表示装置は、請求項１に係る動画像表示装置において、前記映像登場一覧作成手段としての登場人物一覧作成手段が、上記登場人物一覧表示を行なう際には登場回数順に並べ替えて出力すると共に、この並べ替えを行なわれて出力された登場人物一覧を表示する表示手段をさらに備えることを特徴としている。

【００１０】請求項３に係る動画像表示装置は、請求項１に係る動画像表示装置において、前記画面区分手段としての場面分割部を用いた場面分割により分断された所定単位の映像場面毎に、この場面内から１枚の静止画を選び出す代表フレーム選択部と、上記映像登場一覧としての登場人物一覧の表示の際に、該登場人物が登場した映像場面の代表フレームを関連付けて、一覧表示画面に同時に表示する表示部と、を備えることを特徴としている。

【００１１】請求項４に係る動画像表示装置は、請求項３に係る動画像表示装置において、前記表示部に表示された前記一覧表示画面上の前記代表フレームを、利用者が操作・指示することにより、この代表フレームが代表する所定単位の場面から直接動画像を再生することができる入力操作部を備えることを特徴としている。

【００１２】請求項５に係る動画像表示方法は、所定の時間的な長さを有して入力された動画像を連続する静止画像として抽出すると共に、連続する静止画像を時間軸上の所定単位に区分するステップと、前記区分された所定単位の静止画像に人物の顔が含まれるか否かを判断するステップと、その所定単位の静止画像中に顔が含まれているものと判断された場合に、その顔が始めてのものであるときに１つの項目として分類するステップと、前記所定単位の静止画像中に含まれていた顔が既に分類されて登録されている場合に、分類された顔の登場回数を１つ加算するステップと、全ての所定単位の静止画像群について顔の抽出動作を行なってその動画像における登場人物一覧を作成するステップと、を備えることを特徴としている。

【００１３】請求項６に係る動画像表示方法は、請求項５に係る動画像表示方法において、前記連続する静止画像を時間軸上の所定単位に区分するステップが、その所定単位が表現している場面の代表的な画像を代表フレームとして抽出・作成するステップを更に含むことを特徴としている。

【００１４】請求項７に係る動画像表示方法は、請求項５に係る動画像表示方法において、前記登場人物を作成するステップの前に、全ての所定単位についての処理が行なわれたか否かを判断するステップが設けられていることを特徴としている。

【００１５】

【発明の実施の形態】本発明の映像表示装置は、ＤＶＤなどランダムアクセス可能な映像記録再生装置と協調動作して、付加的なユーザインタフェースを提供することを想定している。以下、本発明の実施形態に係る動画像表示装置について添付図面を参照しながら詳細に説明する。

【００１６】まず、本発明の第１実施形態に係る動画像表示装置について図１を用いて説明する。図１において、動画像表示装置は、入力された所定の長さの動画像を複数枚の静止画像が時間的に連続するものとして、これらの静止画像を抽出する静止画像抽出手段１と、抽出された連続する前記静止画像を所定単位のショット毎に区分する画像連続区分手段２と、前記連続画像区分手段２によって区分された各ショット毎に人間の顔が撮影さ

れているか否かを判定する顔映像判定手段３と、前記各ショットに顔が存在すると判定された場合にこの顔がこの所定長さの動画像の中に既に撮影されているか否かを判定する顔既出判定手段４と、異なる顔毎に分類すると共にこの所定長さの動画像における各顔の登場回数を計数する顔分類計数手段５と、分類された前記各顔と計数された前記各顔の登場回数に基づいて、前記動画像の登場人物一覧を作成する登場人物一覧作成手段６と、を備えており、この登場人物一覧作成手段６が出力する登場人物データを受け入れて表示する表示手段７が設けられていても良い。

【００１７】次に、第１実施形態に係る動画像表示装置の更に詳細な構成を示す第２実施形態に係る動画像表示装置について図２を参照しながら説明する。図２において、図１の第１実施形態に係る動画像表示装置に示された構成要素と同一のものは、同一符号により表示することにより重複説明を省略している。第２実施形態に係る動画像表示装置は、静止画像抽出部１と、画面連続区分手段２としての場面分割部１１と、前記画面連続区分手段２を構成すると共に前記場面分割部１１により分割された一纏まりの場面の中から代表フレームを選択する代表フレーム選択部１２と、顔映像判定手段３を構成する顔探索部１３と顔判定部１４と、顔であるものと判定された映像がその動画像において既に検出されているか否かを判定する顔既出判定部４と、判定された顔の各構成要素（目，鼻，口等）を類似するクラスタ（集落）に分類して複数の顔クラスタを作成する顔クラスタ作成部１５と、作成された顔クラスタの分類を記憶するクラスタ分類記憶部１６と、前記顔判定部４により特定された顔をカウントアップするカウントアップ部５と、クラスタ分類記憶部より読み出された顔の分類とその顔の登場回数とを頻出順に従い表示する表示画面１７と、を備えている。

【００１８】上記顔クラスタ作成部１５とクラスタ分類記憶部１６とにより登場人物一覧作成手段６が構成されており、表示画面１７により表示手段７が構成されている。図３はこの第２実施形態に係る動画像表示装置の表示例を示した概念図である。画面１７内には、その映像中で登場した人物が、登場回数順に順位を付されて並べられている。この画面には人物２２に対して、その登場回数の順位２１とともに、その人物が登場したショットの代表フレーム２３が列挙されている。代表フレームは、カット検出によって場面の変わり目を検知し、カットごとに区切られた区間をショットとして、ショットごとに（たとえばショットの先頭フレームなど）１枚ずつの静止画像を代表フレームとするのが従来一般的な方法であるが、本発明ではショット分割の手法および代表フレーム選択は限定しない。

【００１９】最も単純な方法として、映像を１０秒ごとに機械的に分割し、分割された各ショット内の５秒経過時点の映像を代表フレームとする、などとしてもよい。利用者は、代表フレーム２３をマウスなどのポインティング・デバイスで指示することにより、自分の目的の人物２２が登場している任意のショットから映像の本編を見ることができる。

【００２０】次に、上記構成を有する動画像表示装置を用いて動画像を表示させる方法について、第３および第４の実施形態に従って説明する。第３実施形態に係る動画像表示方法は図２に示された第２実施形態に係る動画像表示装置の処理動作に相当するものであり、その詳細は図４に示されている。以下の説明においては、本発明の第２実施形態に係る動画像表示装置が、以上の表示を行なうための処理手順について、図４に基づいて説明する。図４は、本発明の映像表示装置の処理手順を示すフローチャートである。動画像はまず場面分割ステップST１によって処理単位であるショットに分けられる。ショットの生成については、上述のように必ずしも映像中の場面に即したものでなくてもよく、例えば、５秒、１０秒といった所定時間単位の機械的なものでも構わない。以下の処理はショット単位に行なわれるものである。

【００２１】ショット内のすべてのフレームは、フレーム内の画素領域（例えば、「２０×２０」画素）ごとに顔領域が存在しているかを探索される（ステップST２）。例えば、「２０×２０」画素の範囲などより成る探索領域でフレーム内をスキャンし、また、探索領域自体も複数の大きさでスキャンすることによって、そのフレーム内に顔が存在していたかどうかを探索する。

【００２２】ここで、顔の存在の有無の判定方法の一例を説明する。図５は顔の判定方法を説明する概念図である。以下では、探索領域として「２０×２０」画素を設定した場合について説明する。この領域には４００画素を含んでいるので、各画素を座標値とした４００次元の超空間に「２０×２０」画素の映像を置くと１点として表現される。あらかじめ顔であることがわかっている「２０×２０」画素の映像を大量に用意して、この超空間にプロットすると、ある偏りを持った分布になる。この分布の中心位置（平均値）および共分散行列を計算すると、それを用いて分布の特徴量を固有ベクトルと固有値で表現できる。

【００２３】この固有ベクトルを、対応する固有値が大きいものから順に適切な数量選別すると、選別された複数の固有ベクトルによって張られる部分空間（超平面）は、「顔らしい」広がりを代表する超平面といえる。これを固有顔空間と称し、図５においては３４として示している。未知の「２０×２０」画素の画像３１が入力されたときに、この超空間内での固有顔空間３４への距離３２を観測し、この距離３２が設定された閾値以下であったときに、この「２０×２０」画素の領域を顔であったと判断すればよい。

【００２４】一方、この固有顔空間３４内でも、同一人

物から生成された特徴点は近い範囲に分布しており、クラスタ化することができる。これを図５においてはクラスタ３５として示している。すでに人別のクラスタ３５が生成されていたとき、上述の未知画像３１を固有顔空間３４に射影した点３７と、既知顔クラスタの中心点３６と距離３３を計算して、その距離３３が設定された閾値以下であったときには、この「２０×２０」画素の領域は３０６を含む既知顔と同じ人物であったと判定される。

【００２５】以上の距離計算は、単純に各座標値の差の２乗和の平方根をとるユークリッド距離でもよいし、既知顔クラスタ３５の共分散行列を考慮に入れたマハラノビス距離でもよい。本発明に係る動画像表示装置および表示方法は、このような距離計算方法によって効果が限定されるものではない。

【００２６】さて、図４に戻り処理手順の説明を続けると、ステップST２においてショット内のフレームに顔が存在することが調査判定された場合、次に判断ステップST３において上述した手法などを用いて、その顔がショット内のフレームに含まれていたか否かが判断される。ステップST３においてフレーム内に含まれていたものと判断された場合には、そその顔が着目している映像中ですでに登場している顔であるかどうかがステップST４において判別される。

【００２７】ステップST4 において、もしもこの顔が初登場であった場合、ステップST５において、ショット内のその顔の領域映像を複数枚ピックアップし（ショット内の映像の全てでもよい）、その顔のクラスタを作成する。このようにして、ステップST６のように、ショット内の全ての顔について、登場回数を加算してゆく。

【００２８】この一連の処理がすべてのショットについて終了すると、顔別に登場回数のカウントが完了している。すなわち、ステップST７においては、他のショットについても人物の顔が含まれているか否か判断され、含まれていなければステップST８において最後のショットについての処理が終了したか否かが判断され、終了したものと判断された場合には処理ルーチンを終了する。もしも、ステップST７において、他にも顔が含まれるものと判断された場合には、ステップST４に戻りステップST６までの処理動作を繰り返すことになる。また、ステップST８において最後のショットについての処理を終えていないものと判断された場合には、ステップST３に戻りステップST７までの動作を繰り返すことになる。

【００２９】次に、図６を参照しながら本発明の第４実施形態に係る動画図表示方法について説明する。この第４実施形態に係る表示方法は、図１に示された第１実施形態に係る動画像表示装置に対応するものである。図６において、ステップST10では入力された動画像に対してその動画像を構成する例えばフレームのような静止画像を抽出する。動画像は抽出されたこれらの静止画像が所定の時間的単位で連続しているものと考えることができる。

【００３０】ステップST11においては、連続する静止画像を所定単位に区分する。この区分の仕方については、一定の同一場面が連続するシーンを１つのショットとして区分しても良いし、一定の時間、例えば５秒間毎の静止画像や１０秒間毎の静止画像を無作為に１つの所定単位としても良い。次に、ステップST12において、区分された所定単位の静止画像の中に人物の顔が含まれているか否かが判断される。もしも人物の顔が含まれていないものと判断された場合には、次のショットについて処理が進められる。

【００３１】ステップST12において、所定単位の画像中に人物の顔が含まれているものと判断された場合には、ステップST13において、以前に処理したショットの中に現れた人物の顔であるか否かが判断される。前のショットには現れておらず初めてでてきた顔である場合には、ステップST15においてその顔を分類項目の１つとして１回登場してきたものとして分類し、ステップST14を経て次のショットについての処理を行なう。ステップST13において、以前の処理により既に分類されて登録されている顔であるものと判断された場合には、ステップST16において、分類登録されている顔の登場回数を１回カウントアップして次のステップST17へと処理を進める。

【００３２】ステップST17においては、最後の所定単位すなわちショットであるか否かが判断され、最後のショットであるものと判断された場合には、ステップST18において、その所定長さの動画像中に登場する人物の一覧がその回数と共に作成されて例えば表示画面１７上に表示される。ステップST17において、最後のショットではないものと判断された場合にはステップST14に戻り、以後の処理動作を繰り返し行なうことになる。

【００３３】なお、上記の説明では登場する人物の顔が初めて現れる場合に限ってクラスタの作成を行なっていたが、本発明はこれには限定されず、人物の顔が２回目以降の登場であった場合にも、クラスタを作り直して、常に更新された新しいクラスタに登場回数をカウントアップして表示するようにしても良い。このようにすることにより、表示画面１７に表示されている顔は一番最後に現れた顔であることになり、逆検索を行なう際に好都合であるという特有の効果がある。

【００３４】

【発明の効果】以上説明したように、本発明の映像表示装置によれば、利用者は所定の長さの動画像の全体の構造を把握しながら、特に登場人物に関する所望の映像だけを選択的に見ることが可能となり、映像検索に要する時間を大幅に短縮できるという効果を奏する。

【００３５】また、大量の動画像データに対しても検索のための無駄時間をかけることなく所望の人物が登場するシーンを繰り返し同じ映像を見ることなく１回ずつ視

聴することができ、大量情報化社会に対して検索時間を節約し重複視聴時間を省いて迅速に対応できるという効果もある。

【図面の簡単な説明】

【図１】本発明の第１実施形態に係る動画像表示装置の基本構成を示すブロック構成図である。

【図２】本発明の第２実施形態に係る動画像表示装置の詳細な構成を示すブロック構成図である。

【図３】本発明の第２実施形態に係る動画像表示装置の表示画面上の表示例を説明する概念図である。

【図４】本発明の第３実施形態に係る動画像表示方法における処理手順を説明するフローチャートである。

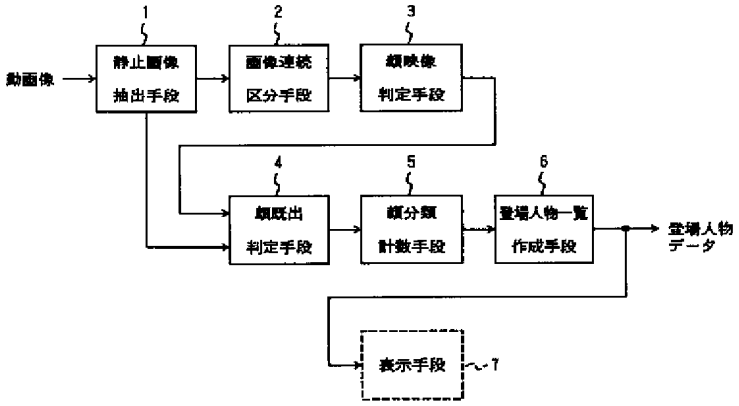
【図５】本発明の第３実施形態における動画像表示方法における処理手順を説明するための概念図である。

【図６】本発明の第４実施形態に係る動画像表示方法の処理手順を示すフローチャートである。

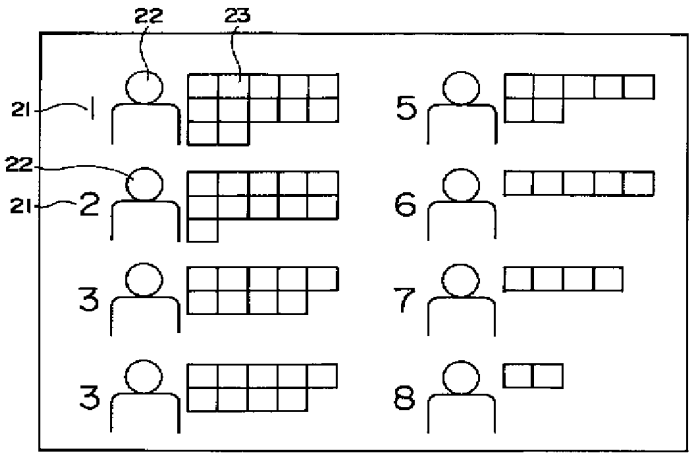
【符号の説明】

１　静止画像抽出手段
２　画像連続区分手段
３　顔映像判定手段
４　顔移出判定手段
５　顔分類計数手段
６　登場人物一覧作成手段
７　表示手段
１１　場面分割部
１２　代表フレーム選択部
１３　顔探索部
１４　顔判定部
１５　顔クラスタ作成部
１６　クラスタ分類記録部
１７　表示画面
２１　登場人物の登場順位
２２　登場人物
２３　登場人物の出演ショットの代表フレーム
３４　固有顔空間
３５　クラスタ

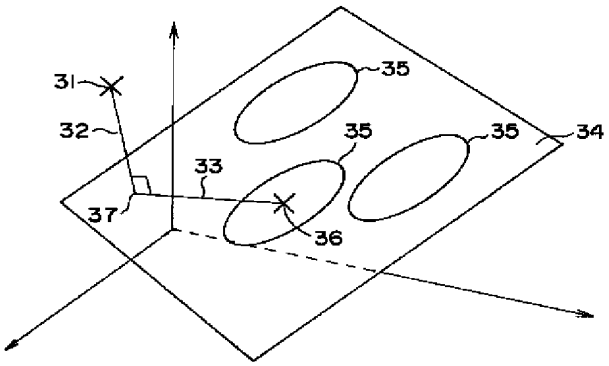
【図１】



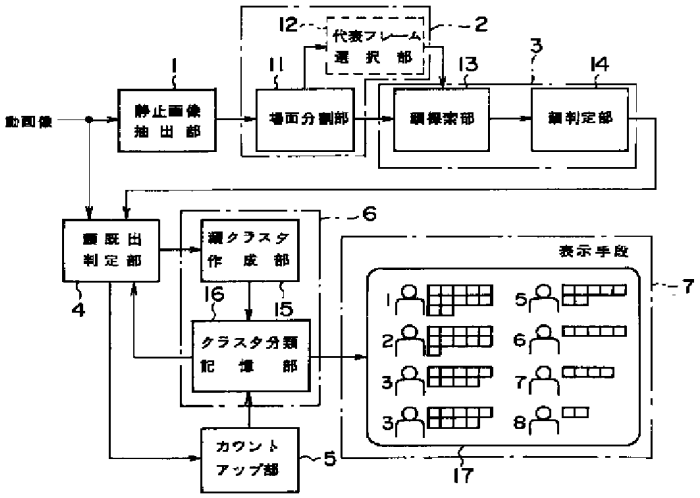
【図３】



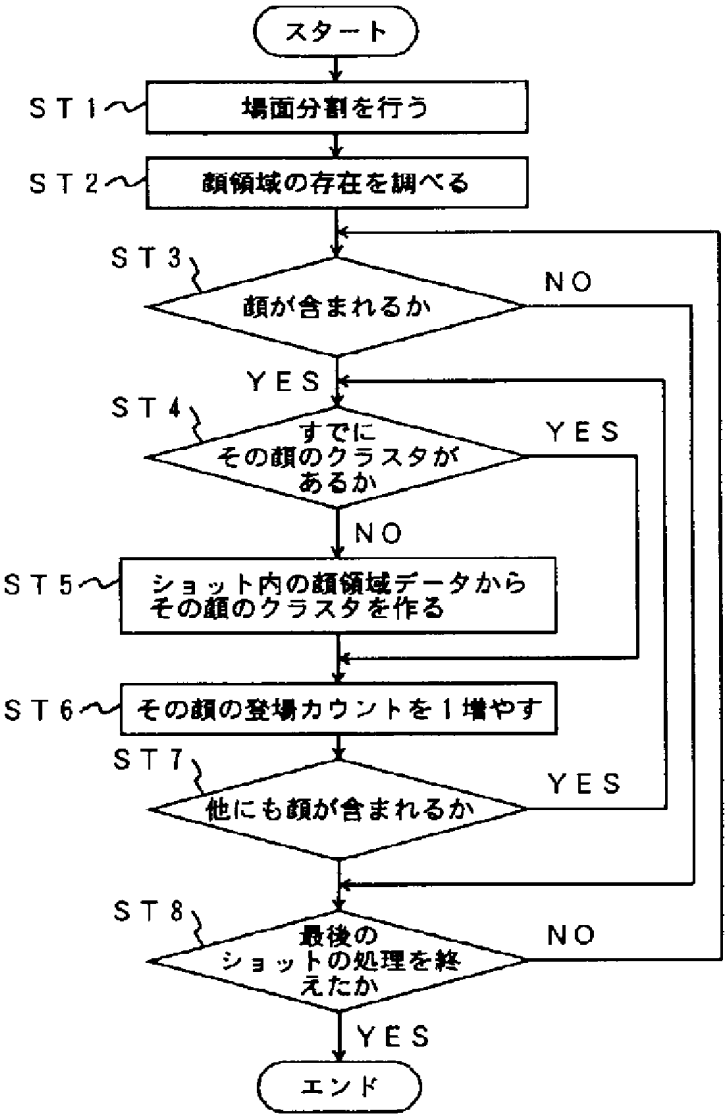
【図５】



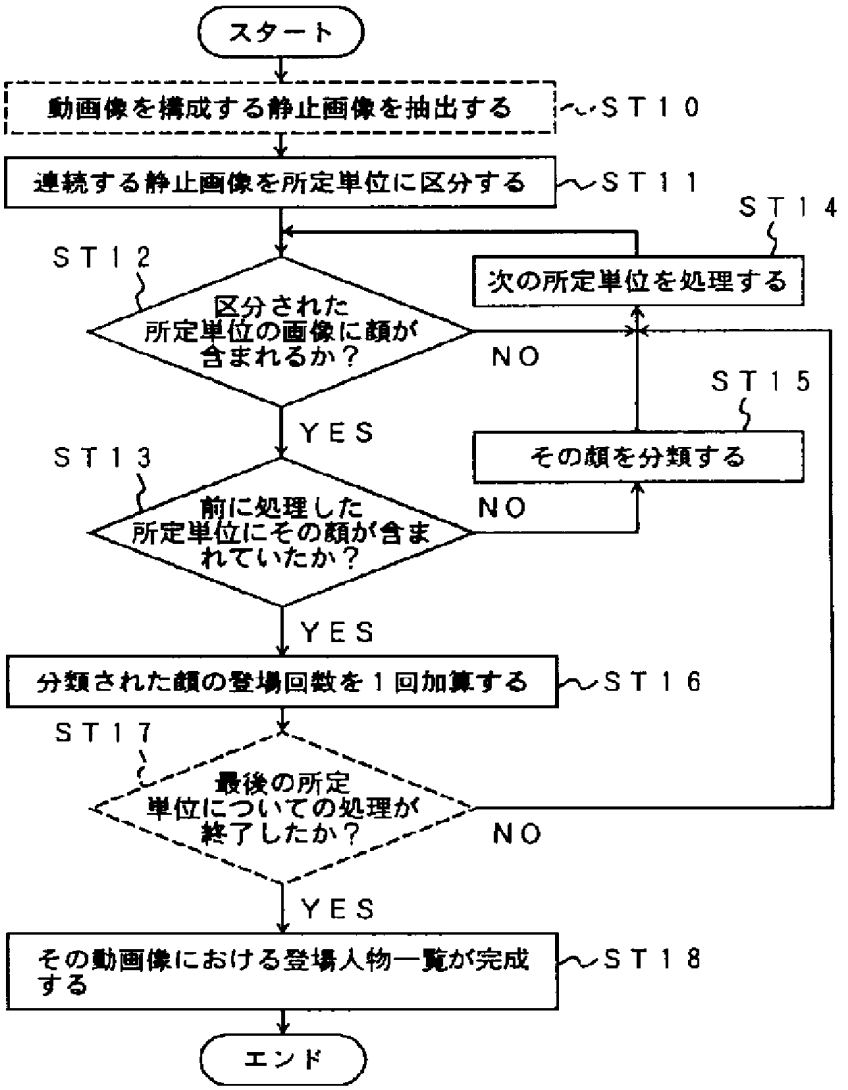
【図２】


動画像
静止画像抽出部
1
代表フレーム選択部
12
2
場面分割部
11
顔探索部
13
3
顔判定部
14
顔既出判定部
4
顔クラスタ作成部
6
16
15
クラスタ分類記憶部
カウントアップ部
5
表示手段
7
17

【図４】


スタート
ＳＴ１
場面分割を行う
ＳＴ２
顔領域の存在を調べる
ＳＴ３
顔が含まれるか
ＮＯ
ＹＥＳ
ＳＴ４
すでに
その顔のクラスタが
あるか
ＹＥＳ
ＮＯ
ＳＴ５
ショット内の顔領域データから
その顔のクラスタを作る
ＳＴ６
その顔の登場カウントを１増やす
ＳＴ７
他にも顔が含まれるか
ＹＥＳ
ＳＴ８
最後の
ショットの処理を終
えたか
ＮＯ
ＹＥＳ
エンド

【図６】



フロントページの続き

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Bibliographic data: JPH10234004 (A) — 1998-09-02

TIME-VARYING IMAGE DISPLAY DEVICE AND DISPLAY METHOD

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Classification: **- international:** ***G06T1/00; G06T13/00; G06T13/80; G06T7/20; H04N5/76; H04N5/91; H04N5/93;*** (IPC1-7): G06T1/00; G06T13/00; G06T7/20; H04N5/76; H04N5/93

- cooperative:

Application number: JP19970033490 19970218

Priority number (s): JP19970033490 19970218

Also published as: JP3315888 (B2)

Abstract of JPH10234004 (A)

PROBLEM TO BE SOLVED: To confirm a person and to retrieve it quickly by extracting a time- varying image as a plurality of still images, classifying the images for each shot, discriminating whether or not a face is in existence in each shot, counting the number of times of appearance and generating a video appearance list. SOLUTION: A still image extract means 1 extracts a received time-varying image as a plurality of still images, an image consecutive classification means 2 classifies the extracted consecutive still images for each shot in the unit of a prescribed number. A face video image discrimination means 3 discriminates whether or not a human face is picked up for each shot classified by the image consecutive classification means 2, and in the case that the presence of the face is discriminated, a face existence discrimination means 4 discriminates whether or not the face has already been picked up in the time-varying image for a prescribed length, and a face classification count means 5 counts the number of times of appearance of each face. Based on the result, a characters list generating means 6 generates a characters list of the time-varying image based on the

result and provides an output of it as characters data and the characters list is displayed on a display means 7.

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DESCRIPTION JPH10234004A

[0001]

INDUSTRIAL APPLICABILITY The present invention relates to a moving image display device and a display method, and particularly a person who divides a moving image of a predetermined length into a plurality of scenes according to a change in a scene and appears in the scene. The present invention relates to a moving image display device and a display method capable of classifying a predetermined image according to the number of appearances.

[0002]

[Conventional Technology] With the spread of satellite broadcasting and cable television broadcasting in recent years, the number of video channels that can be viewed even in ordinary households is steadily increasing.

In addition to conventional video recording media such as video tapes and laser discs, DVDs (Digital Versatile Discs) that can record and play back video and audio information as digital data were commercialized in 1996, and are used by general users. It can be said that the environment in which a large amount of video media can be accessed is being enhanced.

[0003]

On the other hand, the provision of technology that can efficiently access the target video that the user wants to access from among such a large amount of video remains unchanged.

For example, TV viewers can select a video (program) that they would like to see in the program section published in newspapers, and consumers who want to purchase a video software package can read the titles and performers listed on the package. Select the desired video by referring to the synopsis. These are textual descriptions of video information in characters, but not all of the video is described, and it takes a lot of time and effort to describe all of them. ..

[0004]

Also, it is not possible to create a text description that is applicable to all users, and if so, because the requirements for what part of the video you want to see should naturally vary from user to user. Even if it can be done, it will increase the amount of additional information, so it will be difficult to put it into practical use mainly in sources such as broadcasting media where the amount of information that can be supplied is limited.

For this reason, even if a TV viewer wants to watch only a specific topic in a news program, he / she keeps the TV switched on from the beginning of the program and waits until the topic he / she wants to watch is broadcast. It's a huge waste of time because I have to do it, and I'm repeatedly forced to watch topics I watched on another news program.

[0005]

In this way, even if the information media advances dramatically, if the video access environment remains poor, even if a situation is realized in the near future where users can access a large amount of video information, the amount of information can be enjoyed smoothly. However, there is a concern that more users will be confused by the amount of information.

[0006]

PROBLEM TO BE SOLVED: To make it easier for a user to grasp the whole image of the image currently being viewed by displaying the image data in a structured manner when the user views a digital image. And.

[0007]

In addition, the video content expressed in the moving image is analyzed, the face area in the video is compared and judged by a dictionary, and the number of appearances is classified and counted for each character to confirm the person appearing in the moving image. The purpose is to make a quick search.

[0008]

[Means for Solving the Problems] In order to achieve the above object, the moving image display device according to claim 1 includes a still image extracting means for extracting an input moving image as a plurality of still images, and an extracted moving image. An image classification means for classifying the still image for each shot consisting of one or an arbitrary number of images, and a predetermined video determination means for determining whether or not a face is photographed for each shot classified by the image classification means. , A predetermined image appearance determination means for determining whether or not this face has already been captured in the moving image when it is determined that a face is present in each shot, and the predetermined English layer for each different image. Based on a predetermined video classification counting means that classifies and counts the number of appearances of each face in the moving image and the number of appearances of each of the classified faces and each face counted, the video appearance list of the moving image is displayed. It is characterized by having a means for creating a list of video appearances to be created.

[0009]

The moving image display device according to claim 2 is the moving image display device according to claim 1, in the order of the number of appearances when the character list creating means as the video appearance list creating means performs the character list display. In addition to sorting and outputting, it is characterized by further providing a display means for displaying a list of characters that have been sorted and output.

[0010]

The moving image display device according to claim 3 is the moving image display device according to claim 1, for each video scene of a predetermined unit divided by scene division using the scene dividing unit as the screen dividing means. When displaying the character list as the above-mentioned video appearance list, the representative frame selection unit that selects one still image from the inside is associated with the representative frame of the video scene in which the character appears, and the list display screen is displayed at the same time. It is characterized by including a display unit for displaying.

[0011]

The moving image display device according to claim 4 is the moving image display device according to claim 3, wherein the user operates and instructs the representative frame on the list display screen displayed on the display unit. It is characterized by including an input operation unit capable of directly reproducing a moving image from a scene of a predetermined unit represented by this representative frame.

[0012]

The moving image display method according to claim 5 extracts a moving image input having a predetermined time length as a continuous still image, and divides the continuous still image into a predetermined unit on the time axis. Steps to be performed, a step of determining whether or not a person's face is included in the divided still image of a predetermined unit, and a case where it is determined that the still image of the predetermined unit contains a face. , The step of classifying as one item when

the face is the first one, and when the face included in the still image of the predetermined unit is already classified and registered, the classified face It is characterized by including a step of adding one number of appearances and a step of performing a face extraction operation for all the still image groups of a predetermined unit and creating a list of characters in the moving image.

[0013]

The moving image display method according to claim 6 is a scene in which the step of dividing the continuous still image into a predetermined unit on the time axis in the moving image display method according to claim 5 is represented by the predetermined unit. It is characterized by further including a step of extracting and creating a representative image as a representative frame.

[0014]

The moving image display method according to claim 7 is a step of determining whether or not all predetermined units have been processed before the step of creating the characters in the moving image display method according to claim 5. is provided.

[0015]

BEST MODE FOR CARRYING OUT THE INVENTION The video display device of the present invention is expected to cooperate with a randomly accessible video recording / playback device such as a DVD to provide an additional user interface.

Hereinafter, the moving image display device according to the embodiment of the present invention will be described in detail with reference to the accompanying drawings.

[0016]

First, the moving image display device according to the first embodiment of the present invention will be described with reference to FIG.

In FIG. 1, the moving image display device extracts a still image extracting means 1 for extracting these still images, assuming that a plurality of still images of a predetermined length of input are continuous in time. It is determined whether or not a human face is photographed for each shot divided by the continuous image classification means 2 and the image continuous classification means 2 for dividing the continuous still image in a predetermined unit for each shot. The face image determining means 3 and the face appearance determining means 4 for determining whether or not the face has already been captured in the moving image of the predetermined length when it is determined that the face is present in each shot. Based on the face classification counting means 5 that classifies each different face and counts the number of appearances of each face in the moving image of the predetermined length, and the number of appearances of each of the classified faces and the counted number of faces. Even if the character list creating means 6 for creating the character list of the moving image is provided, and the display means 7 for accepting and displaying the character data output by the character list creating means 6 is provided. good.

[0017]

Next, the moving image display device according to the second embodiment, which shows a more detailed configuration of the moving image display device according to the first embodiment, will be described with reference to FIG.

In FIG. 2, the same components as those shown in the moving image display device according to the first embodiment of FIG. 1 are displayed with the same reference numerals, and duplicate description is omitted.

The moving image display device according to the second embodiment constitutes the still image extraction unit 1, the scene division unit 11 as the screen continuous division means 2, and the screen continuous division means 2, and is divided by the scene division unit 11. The representative frame selection unit 12 that selects a representative frame from a set of scenes, the face search unit 13 and the face determination unit 14 that constitute the face image determination means 3, and the image determined to be a face are the images. The face appearance determination unit 4 that determines whether or not it has already been detected in the moving image and each component (eyes, nose, mouth, etc.) of the determined face are classified into similar clusters (villages) and a plurality of faces. A face cluster creation unit 15 for creating a cluster, a cluster classification

storage unit 16 for storing the classification of the created face cluster, a count-up unit 5 for counting up the faces identified by the face determination unit 4, and a cluster classification. It includes a display screen 17 that displays the classification of faces read from the storage unit and the number of appearances of the faces in the order of frequent appearance.

[0018]

The face cluster creating unit 15 and the cluster classification storage unit 16 constitute the character list creating means 6, and the display screen 17 constitutes the display means 7.

FIG. 3 is a conceptual diagram showing a display example of the moving image display device according to the second embodiment.

In the screen 17, the characters appearing in the video are arranged in order of the number of appearances.

On this screen, the representative frame 23 of the shot in which the person appeared is listed along with the rank 21 of the number of appearances of the person 22.

Conventionally, the representative frame detects the transition of the scene by the cut detection, the section divided for each cut is used as a shot, and one still image for each shot (for example, the first frame of the shot) is used as the representative frame. Although it is a general method, the present invention does not limit the shot division method and the representative frame selection.

[0019]

As the simplest method, the video may be mechanically divided every 10 seconds, and the video at the time when 5 seconds have elapsed in each divided shot may be used as a representative frame.

By instructing the representative frame 23 with a pointing device such as a mouse, the user can see the main part of the video from any shot in which the person 22 of his / her purpose appears.

[0020]

Next, a method of displaying a moving image using a moving image display device having the above configuration will be described according to the third and fourth embodiments.

The moving image display method according to the third embodiment corresponds to the processing operation of the moving image display device according to the second embodiment shown in FIG. 2, and the details thereof are shown in FIG.

In the following description, the processing procedure for the moving image display device according to the second embodiment of the present invention to perform the above display will be described with reference to FIG.

FIG. 4 is a flowchart showing a processing procedure of the video display device of the present invention.

The moving image is first divided into shots, which are processing units, by the scene division step ST1.

As described above, the shot generation does not necessarily have to be in line with the scene in the video, and may be mechanical, for example, 5 seconds or 10 seconds.

The following processing is performed on a shot-by-shot basis.

[0021]

All frames in the shot are searched for the presence of a face region for each pixel region within the frame (eg, "20x20" pixels) (step ST2).

For example, by scanning the inside of a frame in a search area consisting of a range of "20 x 20" pixels and scanning the search area itself in a plurality of sizes, it is possible to determine whether or not a face exists in the frame. Explore.

[0022]

Here, an example of a method for determining the presence or absence of a face will be described.

FIG. 5 is a conceptual diagram illustrating a method for determining a face.

Hereinafter, a case where "20 × 20" pixels are set as the search area will be described. Since this region contains 400 pixels, if an image of "20 x 20" pixels is placed in a 400-dimensional hyperspace with each pixel as a coordinate value, it is expressed as one point. When a large amount of "20 x 20" pixel images, which are known to be faces in advance, are prepared and plotted in this hyperspace, the distribution has a certain bias. By calculating the center position (mean value) and covariance matrix of this distribution, the features of the distribution can be expressed by eigenvectors and eigenvalues.

[0023]

When an appropriate quantity of this eigenvector is selected in order from the one with the largest corresponding eigenvalue, the subspace (hyperplane) stretched by the selected eigenvectors can be said to be a hyperplane representing a "face-like" spread.

This is referred to as an eigenface space and is shown as 34 in FIG. When an image 31 of unknown "20 x 20" pixels is input, a distance 32 to the eigenface space 34 in this superspace is observed, and when this distance 32 is equal to or less than a set threshold value. , It may be determined that the area of this "20 x 20" pixel was a face.

[0024]

On the other hand, even within the unique face space 34, the feature points generated from the same person are distributed in a close range and can be clustered.

This is shown as cluster 35 in FIG. When the cluster 35 for each person has already been generated, the point 37 in which the above-mentioned unknown image 31 is projected onto the eigenface space 34, the center point 36 of the known face cluster, and the distance 33 are calculated, and the distance 33 is set. When it is equal to or less than the specified threshold value, it is determined that the area of this "20 x 20" pixel is the same person as the known face including 306.

[0025]

The above distance calculation may be a Euclidean distance that simply takes the square root of the sum of squares of the differences between the coordinate values, or a Mahalanobis distance that takes into account the covariance matrix of the known face cluster 35.

The effect of the moving image display device and the display method according to the present invention is not limited by such a distance calculation method.

[0026]

By the way, returning to FIG. 4 and continuing the explanation of the processing procedure, if it is investigated and determined that a face exists in the frame in the shot in step ST2, then the face is determined by using the method described above in the determination step ST3. Is determined whether or not was included in the frame in the shot.

If it is determined in step ST3 that the face is included in the frame, it is determined in step ST4 whether or not the face is a face that has already appeared in the video of interest.

[0027]

If this face first appeared in step ST4, in step ST5, multiple images of the face area in the shot are picked up (or all of the images in the shot), and a cluster of the faces is created. ..

In this way, as in step ST6, the number of appearances is added for all the faces in the shot.

[0028]

When this series of processing is completed for all shots, the number of appearances is counted for each face.

That is, in step ST7, it is determined whether or not the face of the person is included in the other shots, and if it is not included, it is determined in step ST8 whether or not the processing for the last shot is completed, and the process ends. If it is determined that the processing routine has been completed, the processing routine is terminated. If it is determined in step ST7 that another face is included, the process returns to step ST4 and the processing operations up to step ST6 are repeated. If it is

determined in step ST8 that the processing for the last shot has not been completed, the process returns to step ST3 and the operations up to step ST7 are repeated.

[0029]

Next, the moving image display method according to the fourth embodiment of the present invention will be described with reference to FIG.

The display method according to the fourth embodiment corresponds to the moving image display device according to the first embodiment shown in FIG. In FIG. 6, in step ST10, a still image such as a frame that constitutes the moving image is extracted from the input moving image. The moving image can be considered as a series of the extracted still images in a predetermined time unit.

[0030]

In step ST11, continuous still images are divided into predetermined units.

Regarding the method of this classification, a scene in which a certain same scene is continuous may be classified as one shot, or a still image every 5 seconds or a still image every 10 seconds for a certain time, for example, may be randomly divided into 1. It may be used as one predetermined unit. Next, in step ST12, it is determined whether or not a person's face is included in the divided still image of a predetermined unit. If it is determined that the person's face is not included, the process proceeds for the next shot.

[0031]

If it is determined in step ST12 that a person's face is included in the image of a predetermined unit, whether or not it is the person's face that appeared in the previously processed shot in step ST13. Judged.

If the face does not appear in the previous shot and appears for the first time, classify the face as one of the classification items in step ST15 as one that has appeared once, and then go through step ST14 for the next shot. Is processed. If it is determined in step ST13 that the face has already been classified and registered by the previous process, the number of appearances of the classified and registered face is counted up once in step ST16 to the next. Proceed to step ST17.

[0032]

In step ST17, it is determined whether or not it is the last predetermined unit, that is, a shot, and if it is determined that it is the last shot, in step ST18, a person who appears in the moving image of the predetermined length. Is created together with the number of times, and is displayed on the display screen 17, for example.

If it is determined in step ST17 that it is not the last shot, the process returns to step ST14 and the subsequent processing operations are repeated.

[0033]

In the above explanation, the cluster is created only when the face of the person appearing appears for the first time, but the present invention is not limited to this, and the case where the face of the person appears for the second time or later. Alternatively, the cluster may be recreated so that the number of appearances is counted up and displayed in a new cluster that is constantly updated.

By doing so, the face displayed on the display screen 17 is the face that appears last, which has a peculiar effect that it is convenient when performing a reverse search.

[0034]

[Effect of the Invention] As described above, according to the video display device of the present invention, the user selects only a desired video particularly relating to a character while grasping the entire structure of a moving image having a predetermined length. This has the effect of greatly reducing the time required for video search.

[0035]

In addition, even for a large amount of moving image data, it is possible to repeatedly watch a scene in which a desired person appears without spending wasted time for searching, and to watch the same video once without seeing the same video. On the other hand, it also has the effect of saving search time and eliminating duplicate viewing time so that it can respond quickly.

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CLAIMS JPH10234004A

1.

A still image extraction means for extracting the input moving image as a plurality of still images, an image classification means for dividing the extracted still image for each shot consisting of one image or an arbitrary number of images, and the image classification. A predetermined image determination means for determining whether or not a predetermined image is shot for each shot classified by the means, and a predetermined image when it is determined that a predetermined image exists in each shot. The predetermined video appearance determination means for determining whether or not the image has already been shot in any of the moving images, the predetermined video is classified into different videos, and the appearance of each predetermined video in the moving image. A predetermined video classification counting means for counting the number of times, and a video appearance list creating means for creating a video appearance list of the moving image based on the number of appearances of each predetermined video classified and the predetermined video counted. And, a moving image display device characterized by being provided with.

2.

When displaying the character list, the character list creating means as the video appearance list creating means sorts and outputs the characters in order of the number of appearances, and displays the character list output after this sorting. The moving image display device according to claim 1, further comprising a display means.

3.

A representative frame selection unit that selects one still image from this scene for each video scene of a predetermined unit divided by the scene division using the scene division unit as the screen division means, and the appearance as the above-mentioned video appearance list. The moving image display according to claim 1, further comprising a display unit that associates a representative frame of a video scene in which the character appears and simultaneously displays the character list on the list display screen. apparatus.

4.

An input operation that allows a user to operate and instruct the representative frame on the list display screen displayed on the display unit to directly reproduce a moving image from a scene of a predetermined unit represented by the representative frame. The moving image display device according to claim 3, further comprising a unit.

5.

A step of extracting a moving image input having a predetermined time length as a continuous still image and dividing the continuous still image into a predetermined unit on the time axis, and a step of dividing the divided predetermined unit. The step

of determining whether or not a person's face is included in the still image, and when it is determined that the still image of a predetermined unit contains the face, when the face is the first one. A step of classifying as one item and a step of adding one number of appearances of the classified face when the faces included in the still image of the predetermined unit have already been classified and registered, all of them. A moving image display method comprising: a step of extracting a face from a still image group of a predetermined unit of the above and creating a list of characters in the moving image.

6.

A claim characterized by further including a step of extracting and creating a representative image of a scene represented by the predetermined unit as a representative frame in the step of dividing the continuous still image into a predetermined unit on the time axis. Item 5. The moving image display method according to Item 5.

7.

The moving image display method according to claim 5, wherein a step of determining whether or not all predetermined units have been processed is provided before the step of creating the characters.

Espacenet

Bibliographic data: JP2003150932 (A) — 2003-05-23

IMAGE PROCESSING UNIT AND PROGRAM

Inventor(s): INOUE AKIRA ± (INOUE AKIRA)

Applicant(s): OLYMPUS OPTICAL CO ± (OLYMPUS OPTICAL CO LTD)

Classification: **- international:** ***G06F17/30; G06T1/00; H04N5/76; H04N5/765;*** (IPC1-7): G06F17/30; G06T1/00; H04N5/76; H04N5/765

- cooperative:

Application number: JP20010346596 20011112

Priority number (s): JP20010346596 20011112

Also published as: JP3984029 (B2)

Abstract of JP2003150932 (A)

PROBLEM TO BE SOLVED: To provide an image processing unit and program, capable of specifying a person by simple operation and extracting an image at high speed. SOLUTION: This image processing unit includes register means 11a, 11b for registering a first face image which becomes criteria for retrieval as a reference image, a second extract means for extracting a second face image from an input image input from an image storage device 6, a face image retrieving means 13a for retrieving a reference image of the same person as that of the second face image, a storage means 12 for storing at least one of the name and photographing year of a person added to the concerned reference image when the concerned reference image is extracted by the face image retrieving means together with the second image, and a display means 14 for displaying the concerned reference image together with the second image in relation to each other.

(19)日本国特許庁（ＪＰ）　(12) **公開特許公報（Ａ）**　(11)特許出願公開番号
特開2003－150932
（P2003－150932A）
(43)公開日　平成15年５月23日(2003.5.23)

(51)Int.Cl.[7]	識別記号	ＦＩ		テーマコード（参考）
Ｇ０６Ｔ　1/00	２００	Ｇ０６Ｔ　1/00	２００Ｅ	５Ｂ０５０
	３４０		３４０Ａ	５Ｂ０５７
Ｇ０６Ｆ　17/30	１７０	Ｇ０６Ｆ　17/30	１７０Ｂ	５Ｂ０７５
	３２０		３２０Ａ	５Ｃ０５２
	３５０		３５０Ｃ	５Ｃ０５３

審査請求　未請求　請求項の数７　ＯＬ　（全 12 頁）　最終頁に続く

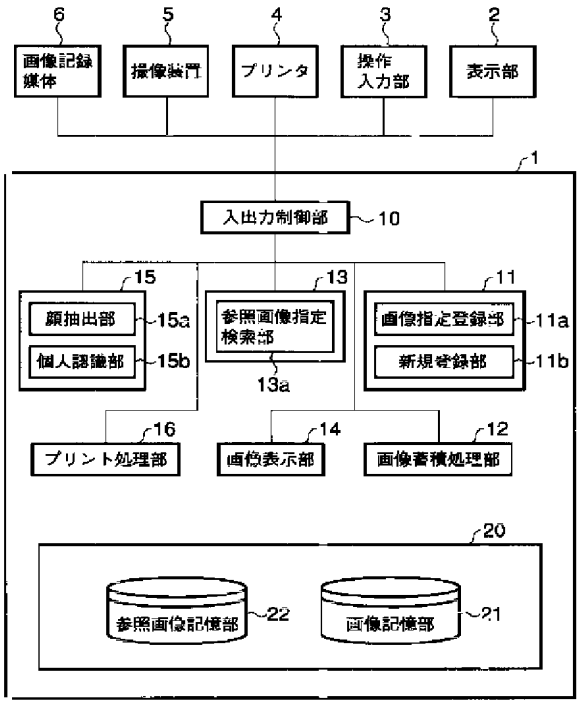
(21)出願番号　特願2001－346596(P2001－346596)
(22)出願日　平成13年11月12日(2001.11.12)

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(54)【発明の名称】　画像処理装置およびプログラム

(57)【要約】
【課題】　簡便な操作で人物を特定して高速に画像を抽出することができる画像処理装置およびプログラムを提供する。
【解決手段】　検索の基準となる第1の顔画像を参照画像として登録する登録手段（１１ａ、１１ｂ）と、画像蓄積装置（６）から入力された入力画像から第２の顔画像を抽出する第２の抽出手段と、第２の顔画像と同一人物の参照画像を検索する顔画像検索手段（１３ａ）と、顔画像検索手段で該当した参照画像を抽出したときは該当した参照画像に付加されている人物の名前、撮影年の内少なくとも１つを第２の画像とともに記憶する記憶手段（１２）と、該当した参照画像を第２の画像とともに関連付けて表示する表示手段（１４）とを備えた画像処理装置である。



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【特許請求の範囲】
【請求項１】　画像検索手段を有する画像処理装置において、
検索の基準となる第1の顔画像を参照画像として登録する登録手段と、
画像蓄積装置から入力された入力画像から第２の顔画像を抽出する第２の抽出手段と、
前記第２の顔画像と同一人物の前記参照画像を検索する顔画像検索手段と、
前記顔画像検索手段で該当した参照画像を抽出したときは該当した参照画像に付加されている人物の名前、撮影年の内少なくとも１つを前記第２の画像とともに記憶する記憶手段と、
前記該当した参照画像を第２の画像とともに関連付けて表示する表示手段とを備えたことを特徴とする画像処理装置。
【請求項２】　前記参照画像と第２の画像との関連付けを修正する修正手段を備えた事を特徴とする請求項１又は２に記載の画像処理装置。
【請求項３】　前記第２の顔画像を新たな参照画像として追加登録する追加登録手段を備えたことを特徴とする請求項１乃至３の内いずれか１の請求項に記載の画像処理装置。
【請求項４】　前記参照画像の撮影された日付けが現在の日付けよりも所定以上過去の日付けであるときは新しい参照画像を登録するように促す指示を出力する警告手段を備えたことを特徴とする請求項１乃至４の内いずれか１の請求項に記載の画像処理装置。
【請求項５】　前記顔画像検索手段は、前記第２の画像の撮影された日付けに近い撮影日付けをもつ参照画像を選択し、その参照画像を基準として前記第２の顔画像を検索する選択検索手段を備えた事を特徴とする請求項１乃至５の内いずれか１の請求項に記載の画像処理装置。
【請求項６】　前記第２の顔画像中の顔の中心近傍の位置を表す座標データ、顔の領域を表す座標データの内少なくとも１つを前記第２の画像とともに記憶する座標記憶手段を備えた事を特徴とする請求項１乃至６の内いずれか１の請求項に記載の画像処理装置。
【請求項７】　画像検索手段を有する画像処理装置の画像処理プログラムにおいて、
コンピュータに、
検索の基準となる第1の顔画像を参照画像として登録する登録手順、
画像蓄積装置から入力された入力画像から第２の顔画像を抽出する第２の抽出手順、
前記第２の顔画像と同一人物の前記参照画像を検索する顔画像検索手順、
前記顔画像検索手段で該当した参照画像を抽出したときは該当した参照画像に付加されている人物の名前、撮影年の内少なくとも１つを前記第２の画像とともに記憶する記憶手順、
前記該当した参照画像を第２の画像とともに関連付けて表示する表示手順、を実行させるためのプログラム。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、電子撮像装置を用いて撮像されたデジタル画像を蓄積し表示する画像処理装置およびプログラムに関し、特に撮影された人物の顔を認識して画像の検索、抽出などを行う画像処理装置およびプログラムに関する。
【０００２】
【従来の技術】近年デジタルカメラなどの電子撮像装置が広く一般家庭にも普及してきており、撮影された画像はパソコンなどの画像処理装置に設けられた記憶装置あるいは記憶媒体に記録されて保存されている。
【０００３】そして、このように保存されている画像を整理し編集して閲覧するための、「デジタルアルバム」とも呼ばれるソフトウエアが発売されている。このソフトウエアは、撮影した画像を多彩なレイアウトで配置でき、また画像だけでなく音声情報も併せて記録できるなど、視覚的に楽しむだけに留まらずより豊富な情報を提供できるように構成されている。
【０００４】ところで、この「デジタルアルバム」を活用して楽しもうとする際には、そのアルバムに貼付する画像の検索が問題になると考えられる。例えば、電子撮像装置で撮影した画像が長年にわたって多数保存されている場合などには、欲しい画像を探そうとしてもなかなか見つけることができない状況になってしまうと考えられる。
【０００５】この検索の問題を解決するための技術として、撮影画像から所定のインデックスを抽出して登録、検索し、検索条件に合った写真をデジタルアルバム装置に表示等するものが提案されている（特開平１０－１２４６５５号公報）。
【０００６】
【発明が解決しようとする課題】しかしながら、この技術ではイメージ情報をインデックス化し、複数のインデックスの組み合わせで検索する画像を特定する方式であるため、例えば、同一人物を検索しようとした場合、その人物が何年にもわたって成長している画像を対象とする場合、また同一人物でも撮影条件によって色調が異なる場合などでは、それぞれに異なる複数のインデックスが必要とされるため、適切なインデックスの選択に熟練が必要とされ、また何種類かのインデックスを用いて繰り返して検索することが必要とされると考えられる。
【０００７】一般家庭でデジタルアルバムを編集しようとする場合は、その検索の対象は大半が人物であり、検索機能を人物に限定したとしてもその検索技術の利用価値は損なわれないと考えられる。
【０００８】例えば、１人または複数人の特定の人物

（以下、「特定人物」という）の成長記録を作るためにその特定人物の画像を検索する、集合写真において特定人物を見つけ出す、あるいは他の人物の名前を照合する、等の人物を識別する検索機能があれば前述のアルバム編集作業には充分活用することができると考えられる。

【０００９】一方、近年の顔認識技術は急速に進歩しており、直接写真などと照合して個人を識別する技術も各種提案されている（例えば、特開２０００－１９４８４９）。したがって、これらの技術を活用することで特定人物の検索を煩雑な操作を行うことなく実行することができると考えられる。

【００１０】ここで、画像同士を比較照合して個人を認識する検索処理は時間を要する処理であるため、操作性の観点からその処理の高速化を図ることが必要不可欠とされる。また、本画像処理装置においては、検索のみでなく画像を多彩な形態で表示等する機能も搭載されることとなるが、この処理についても画像を取り扱うことから同様に高速化を図ることが必要とされる。

【００１１】しかしながら、画像処理の高速化を実現する技術は千差万別であり、本画像処理装置に適合して検索・表示に関する操作の簡便化を確保しつつ、これらの処理の高速化が図れる技術について開示されたものはない。

【００１２】本発明は、係る事情に鑑みてなされたものであって、簡便な操作で人物を特定して画像を高速に検索することができる画像処理装置およびプログラムを提供することを目的とする。

【００１３】

【課題を解決するための手段】上記課題を解消するための本発明は、検索の基準となる第1の顔画像を参照画像として登録する登録手段と、画像蓄積装置から入力された入力画像から第２の顔画像を抽出する第２の抽出手段と、第２の顔画像と同一人物の参照画像を検索する顔画像検索手段と、顔画像検索手段で該当した参照画像を抽出したときは該当した参照画像に付加されている人物の名前、撮影年の内少なくとも１つを前記第２の画像とともに記憶する記憶手段と、該当した参照画像を第２の画像とともに関連付けて表示する表示手段とを備えた画像処理装置である。

【００１４】また本発明は、上記記載の発明である画像処理装置において、参照画像と第２の画像との関連付けを修正する修正手段を備えた画像処理装置である。

【００１５】また本発明は、上記記載の発明である画像処理装置において、第２の顔画像を新たな参照画像として追加登録する追加登録手段を備えた画像処理装置である。

【００１６】また本発明は、上記記載の発明である画像処理装置において、参照画像の撮影された日付けが現在の日付けよりも所定以上過去の日付けであるときは新しい参照画像を登録するように促す指示を出力する警告手段を備えた画像処理装置である。

【００１７】また本発明は、上記記載の発明である画像処理装置において、顔画像検索手段は、第２の画像の撮影された日付けに近い撮影日付けをもつ参照画像を選択し、その参照画像を基準として第２の顔画像を検索する選択検索手段を備えた画像処理装置である。

【００１８】また本発明は、上記記載の発明である画像処理装置において、第２の顔画像中の顔の中心近傍の位置を表す座標データ、顔の領域を表す座標データの内少なくとも１つを第２の画像とともに記憶する座標記憶手段を備えた画像処理装置である。

【００１９】また本発明は、コンピュータに、検索の基準となる第1の顔画像を参照画像として登録する登録手順、画像蓄積装置から入力された入力画像から第２の顔画像を抽出する第２の抽出手順、第２の顔画像と同一人物の参照画像を検索する顔画像検索手順、顔画像検索手段で該当した参照画像を抽出したときは該当した参照画像に付加されている人物の名前、撮影年の内少なくとも１つを第２の画像とともに記憶する記憶手順、該当した参照画像を第２の画像とともに関連付けて表示する表示手順、を実行させるためのプログラムである。

【００２０】

【発明の実施の形態】図１は、本発明に係る画像処理装置の構成を示すブロック図である。

【００２１】本画像処理装置は、画像の検索等を行う画像処理部１と、この画像処理部１の周辺端末である、処理された画像などを表示する表示装置２、画像処理部１に対して各種データあるいは操作指示等の入力を行うための操作入力部３、処理画像等を印刷するプリンタ４、基準となる参照画像の人物像を撮影する撮像装置５及び検索処理等の対象となる画像を記録した画像記録媒体６で構成されている。

【００２２】そして、画像処理部１には、これらの周辺端末と信号の授受を行なう画像処理部１の各処理機能のインターフェースである入出力制御部１０、検索の基準となる参照画像を登録する登録部１１、検索対象となる画像の検索に関連する付加情報を作成して画像処理部１の内部に蓄積する画像蓄積処理部１２、参照画像の人物が撮影された画像を検索する検索部１３、画像を表示すると共にその画像に付加された情報も関連付けて表示する表示部１４、画像から人物の顔を抽出しまたは個人を認識する抽出認識部１５及び画像と付加情報を集約して印刷するプリント処理部１６が備えられている。

【００２３】更に、登録部１１には、画像記録媒体６から入力された画像から人物を抽出して、それに基づいてその人物の顔の部分を取り出した画像である顔画像を作成し参照画像として登録する画像指定登録部１１ａ、撮像装置から入力された撮像に基づいて顔画像を作成し参照画像として登録する新規登録部１１ｂが設けられ、ま

た検索部１３には、画像中に指定された参照画像の人物が撮影されているかどうかを調べて該当した画像を抽出する参照画像指定検索部１３ａが設けられ、そして抽出認識部１５には、画像から人物の顔の部分を識別してその顔画像を抽出する顔抽出部１５ａ、参照画像の顔が指定された画像中にあるかどうかを照合して認識する個人認識部１５ｂが設けられている。

【００２４】また、画像処理部１にはこれらの各機能の動作に必要な情報を記憶する記憶部２０が備えられ、この記憶部２０には検索の対象となる画像を記憶する画像記憶部２１、検索の基準となる参照画像を記憶する参照画像記憶部２２が設けられている。

【００２５】次に、本画像処理装置を構成する各処理機能の動作について説明する。操作者が画像処理装置の電源を投入したとき、また操作入力部３から初期操作を行ったときは表示部２にはメニュー画面が表示される。

【００２６】図２は本画像処理装置の処理機能を表すメニュー画面である。

【００２７】この画像処理装置の処理機能は、登録モード、画像蓄積モード、検索モード、画像表示モードの４つの機能で構成さている。そしてこのメニュー画面では、登録モードには画像指定登録ボタン３０と新規登録ボタン３１が表示され、画像蓄積モードには画像蓄積処理ボタン３２が表示され、検索モードには参照画像指定検索ボタン３３が表示され、画像表示モードには画像表示ボタン３４が表示されている。

【００２８】操作者が参照画像を登録しようとするときは、人物の撮影された画像が記録された画像記録媒体６を画像処理部１に接続してメニュー画面の画像指定登録ボタン３０を操作すると、画像指定登録部１１ａが起動して参照画像の登録処理を行う。

【００２９】図３は、画像指定登録部１１ａの概略の動作手順を示すフロー図である。

【００３０】本画像指定登録機能は、外部の画像記録媒体６に記録されてある画像から参照画像を作成する機能で、参照画像として採用できるかどうかを判断する機能、情報を付加できる機能を併せて有している。尚、この画像記録媒体６に記録されてある画像は、撮像装置５又は他の撮像装置を用いて撮像された画像である。

【００３１】操作者は表示部２に表示される画像記録媒体６に記録されてある画像のサムネイル画像から、参照画像として登録したい人物の撮影されている画像を選択する（Ｓ１）。

【００３２】画像指定登録部１１ａは操作者によって選択された画像を画像記録媒体６から抽出して表示部２に表示する（Ｓ２）と共に、その画像から特定人物の顔画像を抽出させるために顔抽出部１５ａを起動する。顔抽出部１５はその画像に撮影されている人物の顔画像を抽出して（Ｓ３）、その結果を画像指定登録部１１ａに返す。

【００３３】図４は、顔抽出部１５ａによる顔抽出結果を示す図である。

【００３４】元の画像上に、顔抽出部１５が抽出した人物の顔を囲むように枠が表示されている。操作者が参照画像として登録しようとする人物を操作入力部３から選択すると（Ｓ４）、画像指定登録部１１ａはその選択された人物の顔画像が参照画像として適切かどうかを判断する（Ｓ５）。

【００３５】例えば、顔の部分が髪または帽子などで覆われて小さい領域しか写っていない場合、目を閉じている場合、等は不適切な顔画像でありこのような場合は表示部２に適切でない旨の警告を表示しまた不適切な理由を表示（Ｓ７）する。顔画像が適切と判断されたときは（Ｓ６）、顔のサイズを所定の大きさに調整した情報入力画面を表示部２に表示する（Ｓ８）。

【００３６】図５は、情報入力画面の構成を示す図である。

【００３７】この情報入力画面には、リサイズされた顔画像とともに、後に述べる検索時の情報となる名前、生年月日、撮影年月日、登録年月日などの付加情報の入力欄が設けられている。尚、撮影年月日は、元の画像に付随して既に情報が入力されている場合はそのデータを表示し、登録年月日は当日の日付けを予め設定するように構成しても良い。

【００３８】操作者が、これらの情報を入力して（Ｓ９）、登録ボタンを操作すれば画像指定登録部１１ａは顔画像と付加情報を参照画像記憶部２２に登録する（Ｓ１０）。そして、まだ処理すべき画像が残っている場合（Ｓ１１）は、以上の手順を繰り返す。ここで、登録とは参照画像を識別するための識別符号と関連付けて記憶することをいう。

【００３９】操作者が撮像装置５を用いて参照画像を登録しようとするときは、撮像装置５を画像処理部１に接続してメニュー画面の新規登録ボタン３１を操作すると、新規登録部１１ｂが起動して参照画像の登録処理を行う。

【００４０】図６は、新規登録部１１ｂの概略の動作手順を示すフロー図である。

【００４１】本新規登録機能は、撮像装置５から取り込んだ人物画像から参照画像を作成する機能である。まず新規登録部１１ｂは、撮像装置５に対して人物の画像を規定するためのテンプレートを出力する（Ｓ１５）。

【００４２】図７は、撮像装置５の表示部に表示される人物像を示す図である。

【００４３】撮像装置５の撮影者は、このテンプレートに合わせて人物の大きさ向きなどを設定して撮影することで容易に適正な顔画像を得ることが可能となる。こうして撮影された人物画像は新規登録部１１ｂに送り出され、新規登録部１１ｂは撮像装置５から撮像データを受取り、表示部２に表示する（Ｓ１６）と共に、その画像

から特定人物の顔画像を抽出させるために顔抽出部１５ａを起動する。顔抽出部１５はその画像に撮影されている人物の顔画像を抽出して（Ｓ１７）、その結果を新規登録部１１ｂに返す。

【００４４】次に新規登録部１１ｂは、その抽出した顔画像が参照画像として適切かどうかを判断する（Ｓ１８）。例えば、顔の部分が髪または帽子などで覆われて小さい場合、目を閉じている場合、等は不適切な顔画像でありこのような場合は表示部２に適切でない旨の警告を表示しまた不適切な理由を表示（Ｓ２０）する。これによって撮影者は適正な顔画像を容易に再撮影することができる。顔画像が適切と判断されたときは（Ｓ１９）、顔のサイズを所定の大きさに調整した図５に示す情報入力画面を表示部２に表示する（Ｓ２１）。

【００４５】操作者が、後述する検索時の情報となる名前、生年月日、撮影年月日、登録年月日などの付加情報を入力して（Ｓ２２）、登録ボタンを操作すれば新規登録部１１ｂは顔画像と付加情報を参照画像記憶部２２に登録する（Ｓ２３）。そして、まだ処理すべき画像が残っている場合（Ｓ２４）は、以上の手順を繰り返す。

【００４６】参照画像の登録処理をこのように構成すれば、人物の特徴を表す複数のインデックスを抽出しなくても簡便に参照画像として登録ができ、また不適切な顔画像を除去して認識処理の確実性を高めることが可能となる。

【００４７】次に、外部の画像記録装置等から入力される画像を本画像処理装置の画像記憶部２１に蓄積記憶する際の処理について説明する。操作者が、外部端末を画像処理部１に接続してメニュー画面の画像蓄積処理ボタン３２を操作すると、画像蓄積処理部１２が起動して画像蓄積処理を行う。

【００４８】図８、図９は、画像蓄積処理部１２の概略の動作手順を示すフロー図である。

【００４９】本画像蓄積処理機能は、画像を入力する際に、その後の検索処理で必要とされる検索情報を予め抽出して画像と共に蓄積するものである。

【００５０】画像蓄積処理部１２は、撮像装置５または画像記録媒体６から画像データを受取り、表示部２に表示する（Ｓ３０）と共に、その画像から特定人物の顔画像を抽出させるために顔抽出部１５ａを起動する。顔抽出部１５ａはその画像に撮影されている人物の顔画像を抽出して（Ｓ３２）、その結果を画像蓄積処理部１２に返す。

【００５１】画像蓄積処理部１２は、画像データ中にある各顔の位置情報（エリア情報又は中心座標）を確定する（Ｓ３３）。

【００５２】図１０は、画像データ中にある各顔の位置情報を確定する方法を示す図である。

【００５３】図１０の（１）は、顔のエリア情報を示している。この情報は、顔の存在する領域を例えば複数の座標点からなる多角形で囲まれた領域として表している。一方、図１０の（２）は、顔の中心座標を示している。この情報は、顔の存在する画像データ中の位置を例えば顔の領域の略中心位置を示す1点の座標として代表している。これらの顔位置情報は表示処理において人物の顔の位置を特定するための情報として取り扱われる。

【００５４】続いて、画像蓄積処理部１２は個人認識部１５ｂを起動する。個人認識部１５ｂは、顔抽出部１５ａが抽出した顔画像を参照画像の顔画像と照合し、参照画像の人物として認識できるかどうかを調べる個人認識処理を実行する（Ｓ３４）。

【００５５】顔画像が参照画像の特定の人物として認識できた場合（Ｓ３５）は、画像データ中の認識された人物に参照画像の識別符号を付して表示部に表示し（Ｓ３６）、参照画像の特定の人物として認識できなかった場合（Ｓ３５）は、画像データ中のその認識できなかった人物に？符号を付して表示部に表示する（Ｓ３７）。

【００５６】以上の、個人認識処理を画像データに含まれる全ての人物について繰り返し照合を行ない、全ての顔の照合が終わったときに（Ｓ３８）、認識画面を表示部２に表示する（Ｓ３９）。

【００５７】図１１は、認識画面の構成を示す図である。

【００５８】この認識画面では、画像データの各人物に前述の識別符号が付されると共に、参照画像がサムネイル形式で画面の下部に表示されている。この識別符号を介して各人物と参照画像が関連付けられる。そしてこのように関連付けて表示することによって、操作者は認識結果を容易に確認することができる。操作者は、識別符号に基づいて画像データの人物と参照画像の人物を比較して、変更または追加等の識別符号の修正が必要か否かを判断する（Ｓ４０）。

【００５９】変更または追加が必要であるときは、画像上のメニュー（図示していない）から変更または追加を選択してその操作を行う（Ｓ４１）。

【００６０】変更を選択した場合（Ｓ４２）は、先ず画像上の人物を、その顔位置（または顔エリア内）にマウスなどを操作することによって特定し、次にその人物に対応させようとする参照画像をマウスなどを用いて特定する（Ｓ４３）。この操作によって画像データ上の人物に付された識別符号が特定された参照画像の識別符号に変更される。

【００６１】追加を選択した場合（Ｓ４２）は、画像上の人物を、その顔位置（または顔エリア内）にマウスなどを操作することによって特定し、次にその人物を登録させようとする空きの参照画像欄（図１１では識別符号「０」の欄）をマウスなどを用いて対応させる（Ｓ４４）。この操作によって、画像データ上の該人物の顔の部分が参照画像用に切り出されて表示される（Ｓ４５）。そして同時に表示される付加情報入力欄に名前な

どの情報を入力して追加登録操作を行う（Ｓ４６）。すると、追加した参照画像の識別符号が新たな識別符号として画像上の人物に付されて表示される。尚、この追加登録操作は図５に示す情報入力画面を用いて構成しても良い。

【００６２】この変更追加の操作を必要な数だけ繰り返して実行し、全ての変更追加処理が終わったときは（Ｓ４７）、蓄積操作を行うことにより、画像データと参照画像から読み出した人物の個人名、顔位置情報等の付加情報とを画像記憶部２１に記憶させる（Ｓ４８）。そして、以上の処理を全ての入力画像について繰り返して（Ｓ４９）、画像蓄積処理を終了する。

【００６３】図１２は、画像記憶部２１のデータの構成を示す図である。

【００６４】ヘッダ部には、その画像のファイル名と共に、撮影年月、登録年月、人物の名前、生年月日、顔位置情報等の付加情報が記憶され、それと対応した本画像部には画像データが例えばＪＰＥＧ方式によって圧縮されるなどして記憶されている。

【００６５】尚、本実施例では、外部の画像記録装置等から入力される画像を対象として蓄積記録する処理について説明したが、本発明はこの形態に限定されるものではなく、一旦前述の処理がされ装置内部の画像記憶部２１に蓄積されている画像を対象として再度同じ処理を繰り返して蓄積記録するように構成することもできる。このように構成すれば、新しく追加された参照画像に関する付加情報を取り込んで、検索などの処理を行うことが可能となる。

【００６６】次に、検索機能について説明する。本機能は、参照画像の人物が含まれている画像を抽出してサムネイルで表示する機能であり、このとき検索する画像は外部画像記録媒体に記録されている場合と、内部の記録媒体である画像記録部に記録されている場合の２つの場合がある。

【００６７】先ず、外部画像記録媒体に記録されている画像の処理について説明する。外部端末を画像処理部１に接続してメニュー画面の参照画像指定検索ボタン３３を操作すると、参照画像指定検索部１３ａが起動して検索処理を行う。

【００６８】図１３、図１４は、参照画像指定検索部１３ａの概略の動作手順を示すフロー図である。

【００６９】先ず参照画像指定検索部１３ａは、図１５に示す参照画像の一覧を表示部２に表示する（Ｓ５１）。操作者は、この画面上で検索したい人物をマウスなどで指定して特定するが、この際複数画像を指定することも可能である（Ｓ５２）。すると、特定された該当人物の参照画像のみが表示部２に一覧表示される（Ｓ５３）。

【００７０】続いて参照画像指定検索部１３ａは、一覧表示されている参照画像の付帯情報から撮影年月を取り出して、その年月が現在から所定の期間内にあるか否かを調べる（Ｓ５４）。所定の期間内にない場合は、その参照画像は旧い画像であるため、その参照画像のみの表示色を変更するなどして操作者に注意を促し、新しい参照画像の再登録を促す警告メッセージを出力する（Ｓ５５）。このように構成することにより、旧い参照画像のまま更新がされない不具合を防止することができる。また、該当人物の年令によって所定期間を変更してもよい。つまり、生年月日より年令を計算し、子供であれば顔の変化が大きいことから所定期間を短く設定するようにするとより適切になる。

【００７１】尚、本実施例では、人物を特定したときに参照画像の撮影年月のチェックを行っているが、この形態のみに限定されず参照画像を一覧表示する際には常に撮影年月のチェックを行うように構成しても良い。

【００７２】次に参照画像指定検索部１３ａは、撮像装置５または画像記録媒体６から画像データを受取り、表示部２に表示する（Ｓ５６）と共に、その画像から特定人物の顔画像を抽出させるために顔抽出部１５ａを起動する。顔抽出部１５ａはその画像に撮影されている人物の顔画像を抽出して（Ｓ５７）、その結果を参照画像指定検索部１３ａに返す。

【００７３】顔画像が抽出できなかった場合（Ｓ５８）は、抽出できない旨のメッセージを表示して（Ｓ５９）、次の画像データの処理を開始する。

【００７４】顔画像が抽出できた場合（Ｓ５８）は、その顔画像と参照画像を比較照合させるが、参照画像に同一人物が複数含まれている場合は、その画像データが撮影された日付けに近い日付けを持つその人物の参照画像を選択する（Ｓ６０）。そして、参照画像指定検索部１３ａは個人認識部１５ｂを起動する。個人認識部１５ｂは、顔抽出部１５ａが抽出した顔画像を参照画像の顔画像と照合し、参照画像の人物として認識できるかどうかを調べる個人認識処理を実行する（Ｓ６１）。

【００７５】参照画像の特定の人物として認識できた場合（Ｓ６２）は、画像データ中の認識された人物を、例えばマークを付するなどして強調して記憶する（Ｓ６３）。参照画像の特定の人物として認識できなかった場合（Ｓ６２）は、その画像データ中には参照画像の人物がいない旨のメッセージを表示部に表示（Ｓ６４）して次の画像データの処理を行う。

【００７６】この処理を全ての入力画像データについて繰り返し、全ての入力画像データの処理が完了したときは（Ｓ６５）、抽出した画像データをサムネイル形式で一覧として表示する（Ｓ６６）。そして、このサムネイルを操作者が選択するとその画像データが通常のサイズで表示される。

【００７７】このように構成することにより、検索しようとする画像の撮影された日付に近い顔画像を参照画像として検索することができるため、同一人物の他の参照

画像に基づいた検索が不要となり検索時間を短縮できると共に、検索精度を高めることができる。また、検索結果をサムネイル表示、拡大表示する機能を設けることにより検索結果を容易に確認することができる。

【００７８】次に、内部記録媒体に記録されている画像の処理について説明する。操作者がメニュー画面の参照画像指定検索ボタン３３を操作すると、参照画像指定検索部１３ａが起動して検索処理を開始する。

【００７９】図１６は、参照画像指定検索部１３ａの概略の動作手順を示すフロー図である。本内部画像の検索では、前述の画像蓄積処理によって検索情報が既に抽出されているため、外部画像の検索と比して高速に検索することができる。

【００８０】参照画像指定検索部１３ａは、先ず参照画像の選択処理を行うがこの手順は前述のステップＳ５１からステップＳ５５と同じであるため、その詳細の説明は省略する。続いて参照画像指定検索部１３ａは、指定された画像記憶部２１の各画像毎のヘッダ部の情報を取り出す（Ｓ７０）。そして、参照画像の付加情報に記載されてある名前などが、ヘッダ情報にある名前等と一致するかどうかを調べる（Ｓ７１）。一致する場合（Ｓ７２）は、その画像を抽出して記憶し（Ｓ７３）、一致しない場合は、その画像には検索する人物はいないものとして次の画像データの検索処理に移る。

【００８１】この処理を全ての入力画像データについて繰り返し、全ての入力画像データの処理が完了したときは（Ｓ７４）、抽出した画像データをサムネイル形式で一覧として表示する（Ｓ７５）。そして、このサムネイルを操作者が選択するとその画像データが通常のサイズで表示される。

【００８２】このように、付加情報を検索するように構成することで高速に検索を行うことができる。

【００８３】次に、内部に蓄積された画像を本画像処理装置の表示部２に表示し、またプリンタ４に出力する際の処理について説明する。操作者が、メニュー画面の画像表示ボタン３４を操作すると、画像表示部１４が起動して画像表示処理を行う。

【００８４】図１７は、画像表示部１４の概略の動作手順を示すフロー図である。

【００８５】操作者が表示したい画像を指定すると、画像表示部１４は画像記憶部２１からヘッダ情報とその画像データを読み出して表示部２に画像を表示する（Ｓ８０）。操作者が画像データの特定の人物の上にマウス等を操作してポインタを移動すると、画像表示部１４はそのポインタの位置を読み取って、ヘッダ情報の顔位置データである顔座標または顔エリア情報と対応させる（Ｓ８１）。

【００８６】そして、ヘッダ情報の顔位置データと対応が付けられたときは、その人物の名前などの個人情報を表示し（Ｓ８２）、更に、操作者がその人物の上にポインタを合わせてクリックすれば人物の拡大像が表示される（Ｓ８３）。

【００８７】続いて、操作者が表示されている画像を印刷する指示操作を行ったときは、画像表示部１４は画像記憶部２１から読み出したヘッダ情報とその画像データをプリント処理部１６に渡して印刷動作を開始させる（Ｓ８６）。そしてプリント処理部１６は画像と共に、ヘッダ情報にある日付け、個人名などの付加情報をプリントする（Ｓ８７）。

【００８８】このように、本機能では、前述の画像蓄積処理によって付加情報が既に抽出されているため、人物の画像上にポインタを置くだけでその人物の名前が表示でき、また人物上でクリックすればその人物の拡大像を表示させることができ、プリントアウトすれば画像だけでなく写っている人物の名前などの付加情報も併せて印刷することができる。従って、簡便な取り扱いによって関連した情報を集約して参照することができる。

【００８９】尚、本実施例では撮像画像を対象としてデジタルアルバムの機能を目的として説明したが、本発明はこの実施例に限定されるものではなく、顔を認識して特定するための個人認証、写真照合等の技術領域に広く適用できるものである。

【００９０】

【発明の効果】以上説明したように、本発明による画像蓄積記録手段を用いて構成すれば簡便な操作で人物を特定して高速に画像を検索することができる。

【図面の簡単な説明】

【図１】本発明に係る画像処理装置の構成を示すブロック図。

【図２】画像処理装置の処理機能を表すメニュー画面。

【図３】画像指定登録部の概略の動作手順を示すフロー図。

【図４】顔抽出部による顔抽出結果を示す図。

【図５】情報入力画面の構成を示す図

【図６】新規登録部の概略の動作手順を示すフロー図。

【図７】撮像装置の表示部に表示される人物像を示す図。

【図８】画像蓄積処理部の概略の動作手順を示すフロー図。

【図９】画像蓄積処理部の概略の動作手順を示すフロー図。

【図１０】画像データ中にある各顔の位置情報を確定する方法を示す図。

【図１１】認識画面の構成を示す図。

【図１２】画像記憶部のデータの構成を示す図。

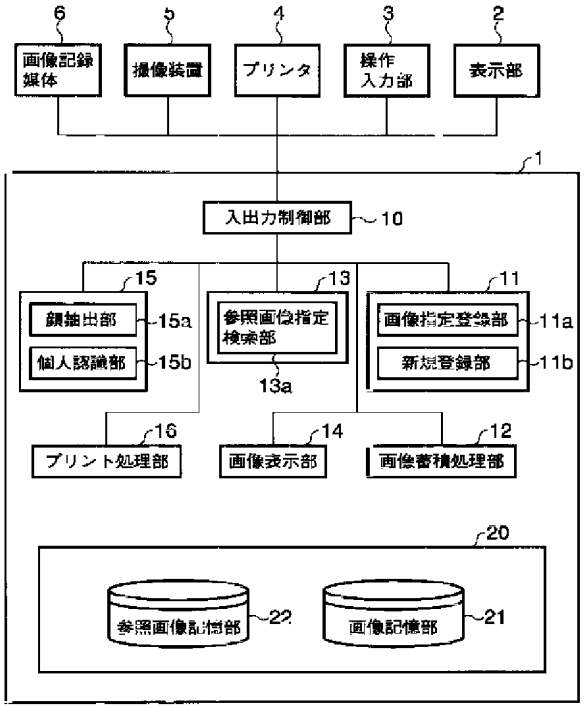
【図１３】参照画像指定検索部の概略の動作手順を示すフロー図。

【図１４】参照画像指定検索部の概略の動作手順を示すフロー図。

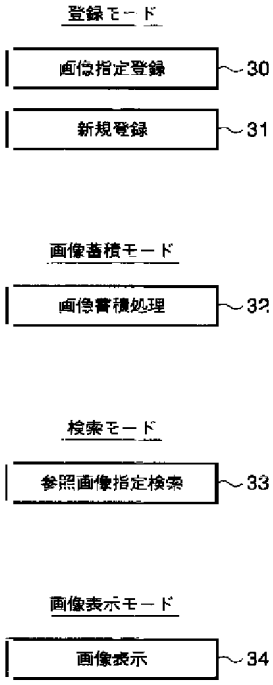
【図１５】参照画像の一覧を示す図。

【図１６】参照画像指定検索部の概略の動作手順を示すフロー図。
【図１７】画像表示部の概略の動作手順を示すフロー図。
【符号の説明】
１…画像処理部
２…表示部
４…プリンタ
５…撮像装置
６…画像記録媒体
１１ａ…画像指定登録部
１１ｂ…新規登録部
１２…画像蓄積処理部
１３ａ…参照画像指定検索部
１４…画像表示部
１５ａ…顔抽出部
１５ｂ…個人認識部
１６…プリント処理部
２１…画像記憶部
２２…参照画像記憶部

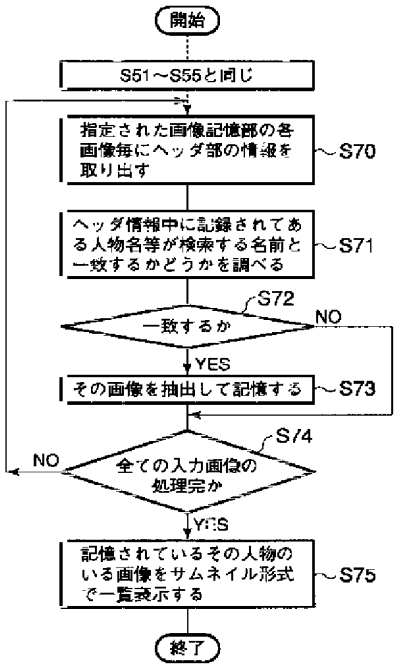
【図１】



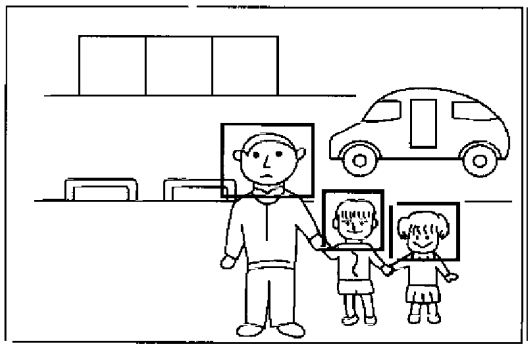
【図２】



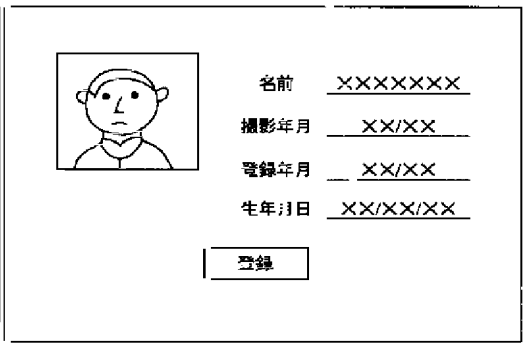
【図１６】



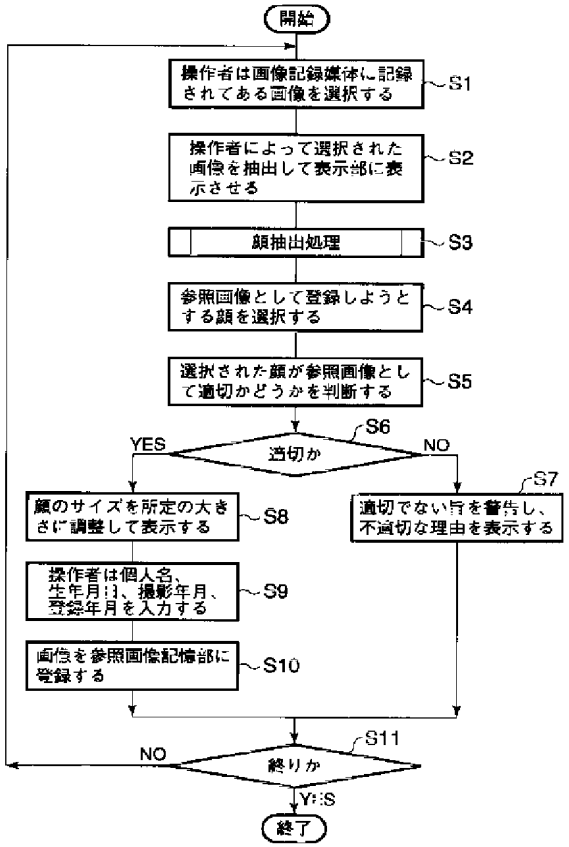
【図４】



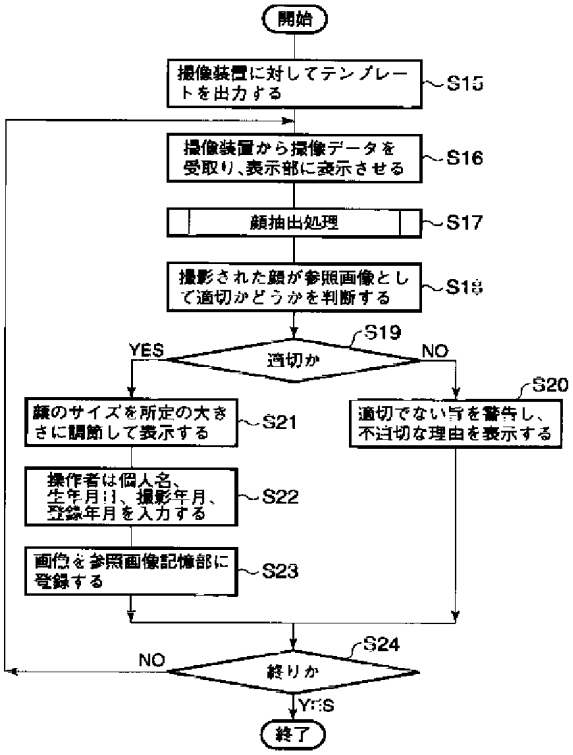
【図５】



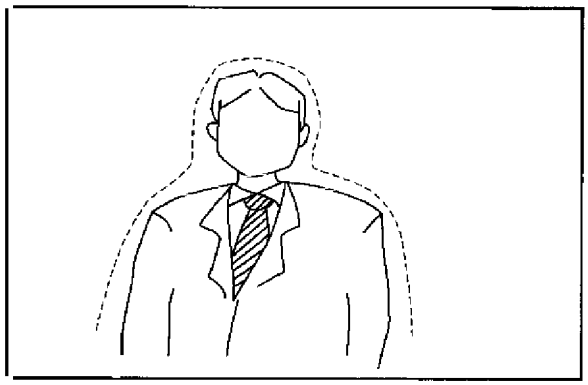
【図３】


開始
操作者は画像記録媒体に記録されてある画像を選択する
S1
操作者によって選択された画像を抽出して表示部に表示させる
S2
顔抽出処理
S3
参照画像として登録しようとする顔を選択する
S4
選択された顔が参照画像として適切かどうかを判断する
S5
適切か
S6
YES
NO
顔のサイズを所定の大きさに調整して表示する
S8
適切でない旨を警告し、不適切な理由を表示する
S7
操作者は個人名、生年月日、撮影年月、登録年月を入力する
S9
画像を参照画像記憶部に登録する
S10
終りか
S11
NO
YES
終了

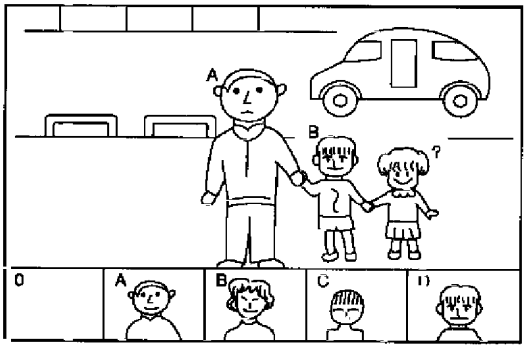
【図６】


開始
撮像装置に対してテンプレートを出力する
S15
撮像装置から撮像データを受取り、表示部に表示させる
S16
顔抽出処理
S17
撮影された顔が参照画像として適切かどうかを判断する
S18
適切か
S19
YES
NO
顔のサイズを所定の大きさに調節して表示する
S21
適切でない旨を警告し、不適切な理由を表示する
S20
操作者は個人名、生年月日、撮影年月、登録年月を入力する
S22
画像を参照画像記憶部に登録する
S23
終りか
S24
NO
YES
終了

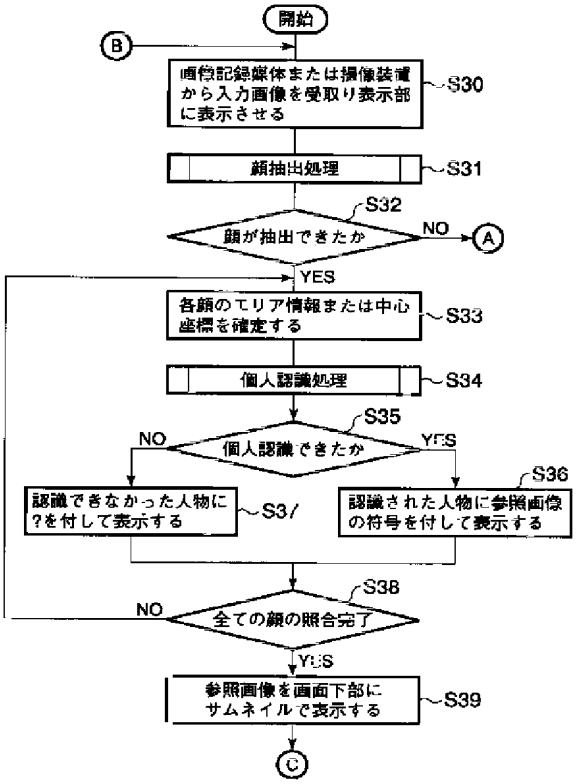
【図７】



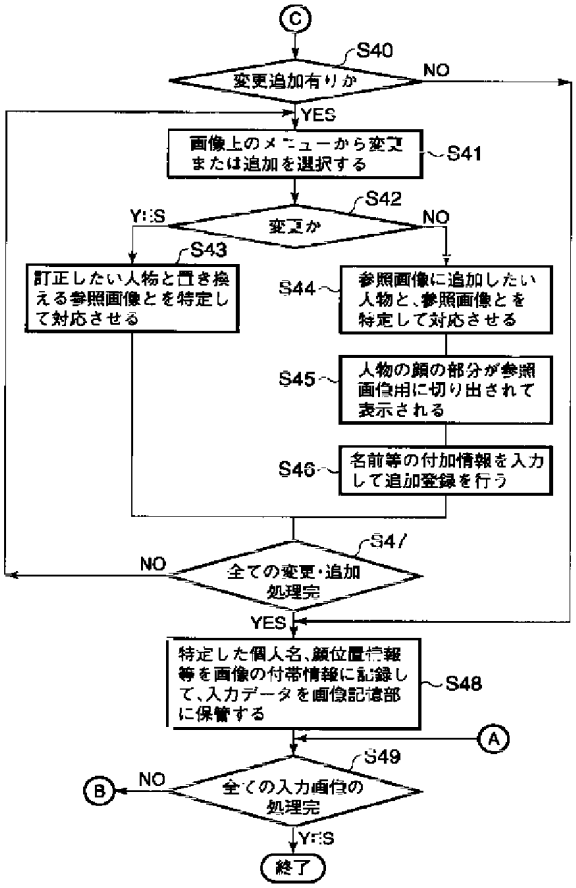
【図１１】


A
B
0
A
B
C
D

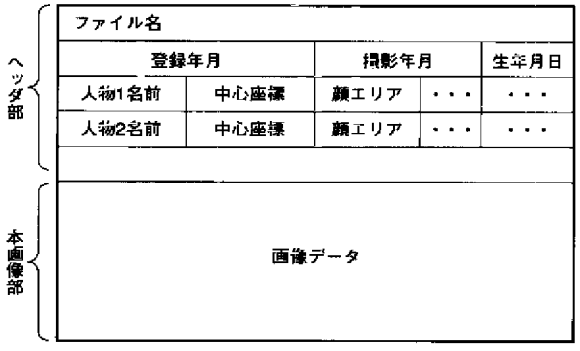
【図８】


開始
B
画像記録媒体または撮像装置から入力画像を受取り表示部に表示させる
S30
顔抽出処理
S31
S32
顔が抽出できたか
NO
A
YES
各顔のエリア情報または中心座標を確定する
S33
個人認識処理
S34
S35
NO
個人認識できたか
YES
S36
認識できなかった人物に?を付して表示する
S37
認識された人物に参照画像の符号を付して表示する
S38
NO
全ての顔の照合完了
YES
参照画像を画面下部にサムネイルで表示する
S39
C

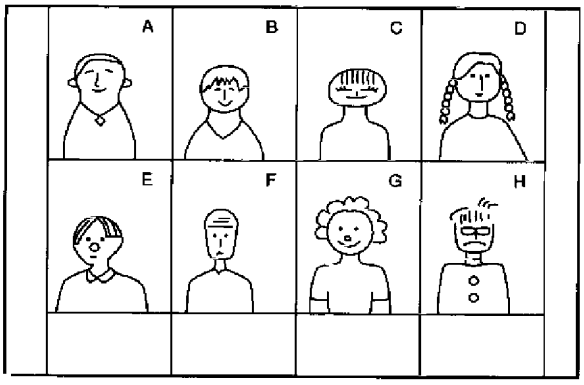
【図９】


C
S40
変更追加有りか
NO
YES
画像上のメニューから変更または追加を選択する
S41
S42
YES
変更か
NO
S43
訂正したい人物と置き換える参照画像とを特定して対応させる
S44
参照画像に追加したい人物と、参照画像とを特定して対応させる
S45
人物の顔の部分が参照画像用に切り出されて表示される
S46
名前等の付加情報を入力して追加登録を行う
S47
NO
全ての変更・追加処理完
YES
特定した個人名、顔位置情報等を画像の付帯情報に記録して、入力データを画像記憶部に保管する
S48
A
S49
B
NO
全ての入力画像の処理完
YES
終了

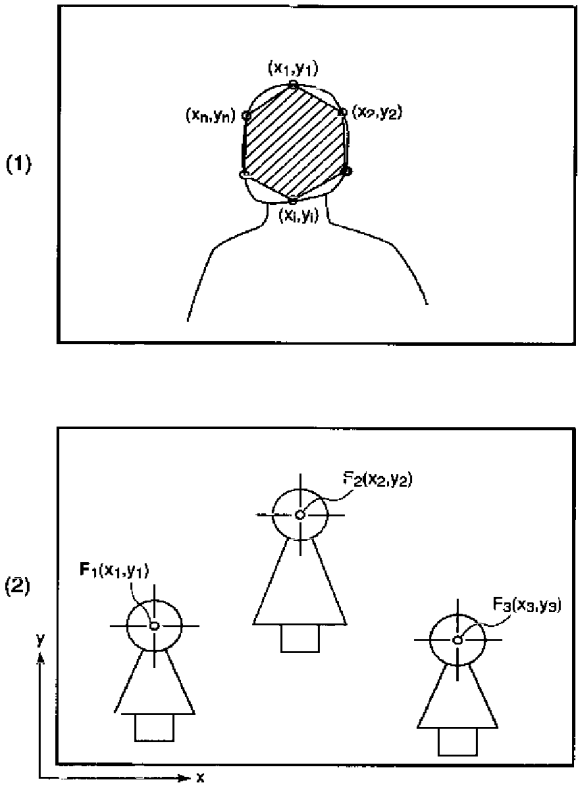
【図１２】


ヘッダ部
本画像部
ファイル名
登録年月
撮影年月
生年月日
人物1名前
中心座標
顔エリア
・・・
・・・
人物2名前
中心座標
顔エリア
・・・
・・・
画像データ

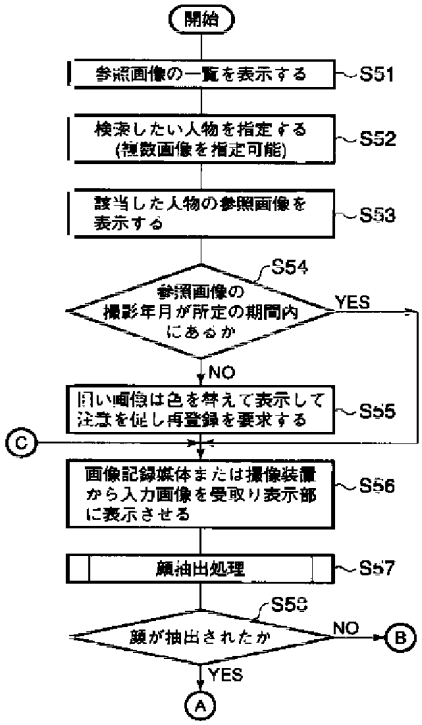
【図１５】


A
B
C
D
E
F
G
H

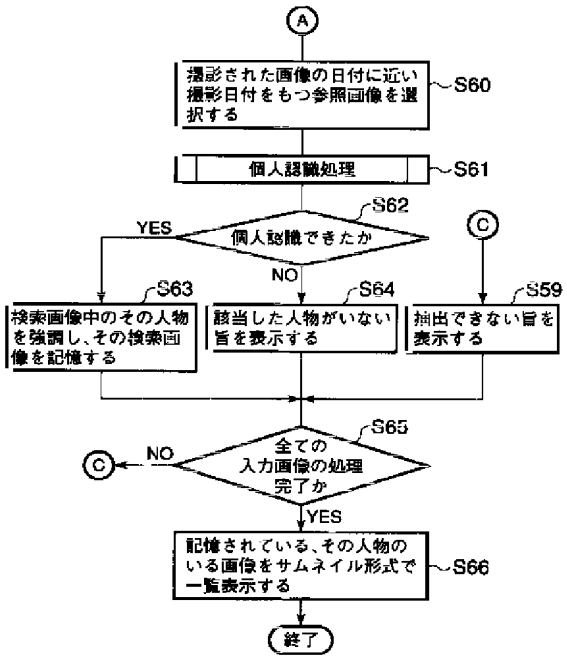
【図１０】



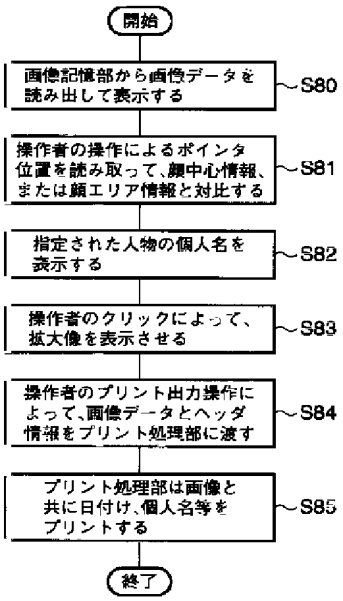
【図１３】



【図１４】



【図１７】



フロントページの続き

(51)Int.Cl.[7]	識別記号	FI		(参考)
G06F 17/30	380	G06F 17/30	380F	
H04N 5/76		H04N 5/76	B	
5/765		5/91	L	

Fターム(参考) 5B050 AA09 BA10 BA12 BA15 CA07
DA01 EA05 EA12 EA18 FA02
FA12 FA19 GA08
5B057 BA02 DA07 DA08 DA12 DB02
DC33 DC36 DC39
5B075 ND06 NK25 NK37 PP13 PP28
PQ32 PQ48
5C052 AA12 AB04 AC08 CC11 DD02
EE02 EE03
5C053 FA04 FA05 FA08 GB36 HA29
HA40 JA21 LA01 LA03 LA11

Espacenet

Bibliographic data: JP2003150932 (A) — 2003-05-23

IMAGE PROCESSING UNIT AND PROGRAM

Inventor(s): INOUE AKIRA ± (INOUE AKIRA)

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Classification: **- international:** ***G06F17/30; G06T1/00; H04N5/76; H04N5/765;*** (IPC1-7): G06F17/30; G06T1/00; H04N5/76; H04N5/765

- cooperative:

Application number: JP20010346596 20011112

Priority number (s): JP20010346596 20011112

Also published as: JP3984029 (B2)

Abstract of JP2003150932 (A)

PROBLEM TO BE SOLVED: To provide an image processing unit and program, capable of specifying a person by simple operation and extracting an image at high speed. SOLUTION: This image processing unit includes register means 11a, 11b for registering a first face image which becomes criteria for retrieval as a reference image, a second extract means for extracting a second face image from an input image input from an image storage device 6, a face image retrieving means 13a for retrieving a reference image of the same person as that of the second face image, a storage means 12 for storing at least one of the name and photographing year of a person added to the concerned reference image when the concerned reference image is extracted by the face image retrieving means together with the second image, and a display means 14 for displaying the concerned reference image together with the second image in relation to each other.

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DESCRIPTION JP2003150932A

[0001]

INDUSTRIAL APPLICABILITY The present invention relates to an image processing device and a program for accumulating and displaying a digital image captured by using an electronic image pickup device, and particularly recognizes a photographed person's face to search and extract an image. It relates to an image processing apparatus and a program which performs such as.

[0002]

[Conventional Technology] In recent years, electronic imaging devices such as digital cameras have become widespread in general households, and captured images are recorded and stored in a storage device or storage medium provided in an image processing device such as a personal computer. ing.

[0003]

Then, software called a "digital album" for organizing, editing, and viewing the images stored in this way has been released.

This software is configured to provide more abundant information than just visual enjoyment, such as being able to arrange captured images in a variety of layouts and recording not only images but also audio information. There is.

[0004]

By the way, when trying to enjoy using this "digital album", it is considered that the search for the image to be attached to the album becomes a problem.

For example, when a large number of images taken by an electronic imaging device have been stored for many years, it may be difficult to find the desired image.

[0005]

As a technique for solving this search problem, a technique has been proposed in which a predetermined index is extracted from a captured image, registered and searched, and a photograph matching the search conditions is displayed on a digital album device. 10-124655).

[0006]

However, since this technique is a method of indexing image information and specifying an image to be searched by a combination of a plurality of indexes, for example, when trying to search for the same person, that person When targeting

images that have grown over the years, or when the same person has different color tones depending on the shooting conditions, multiple different indexes are required for each, so select an appropriate index. It is considered that skill is required for this, and it is necessary to search repeatedly using several types of indexes.

[0007]

When trying to edit a digital album at home, most of the search targets are people, and even if the search function is limited to people, it is considered that the utility value of the search technology is not impaired.

[0008]

For example, searching for an image of one or more specific people (hereinafter referred to as "specific person") to make a growth record of that specific person, finding a specific person in a group photo, or the name of another person. If there is a search function for identifying a person, such as collating, it is considered that it can be fully utilized for the above-mentioned album editing work.

[0009]

On the other hand, face recognition technology has been rapidly advanced in recent years, and various techniques for identifying an individual by directly collating with a photograph or the like have been proposed (for example, Japanese Patent Application Laid-Open No. 2000-194849).

Therefore, it is considered that the search for a specific person can be executed without performing complicated operations by utilizing these techniques.

[0010]

Here, since the search process of comparing and collating images to recognize an individual is a time-consuming process, it is indispensable to speed up the process from the viewpoint of operability.

In addition, this image processing device will be equipped with a function to display images in various forms as well as search, but it is necessary to speed up this processing as well because it handles images. It is said that.

[0011]

However, there are many different technologies for speeding up image processing, and technologies that can speed up these processes while ensuring the simplification of search and display operations that are suitable for this image processing device. Nothing has been disclosed.

[0012]

The present invention has been made in view of such circumstances, and an object of the present invention is to provide an image processing device and a program capable of identifying a person with a simple operation and searching for an image at high speed.

[0013]

[Means for Solving the Problems] The present invention for solving the above problems is based on a registration means for registering a first face image as a search reference as a reference image and an input image input from an image storage device. It corresponds to the second extraction means for extracting the second face image, the face image search means for searching the reference image of the same person as the second face image, and the corresponding reference image when the corresponding reference image is extracted by the face image search means. A storage means for storing at least one of the name of the person and the shooting year added to the reference image together with the second image, and a display means for displaying the corresponding reference image in association with the second image. It is an image processing device provided.

[0014]

Further, the present invention is an image processing device provided with a correction means for correcting the association between the reference image and the second image in the image processing device according to the above-described invention.

[0015]

Further, the present invention is an image processing apparatus provided with an additional registration means for additionally registering a second face image as a new reference image in the image processing apparatus according to the above-described invention.

[0016]

Further, the present invention prompts the image processing apparatus according to the above-described invention to register a new reference image when the date on which the reference image was taken is more than a predetermined date past the current date. It is an image processing device provided with a warning means for outputting an instruction.

[0017]

Further, in the image processing apparatus according to the above-described invention, the face image search means selects a reference image having a shooting date close to the shooting date of the second image, and uses the reference image as a reference. It is an image processing apparatus provided with a selective search means for searching a second face image.

[0018]

Further, in the image processing apparatus according to the above-described invention, the present invention uses at least one of the coordinate data representing the position near the center of the face in the second face image and the coordinate data representing the area of the face as the second. It is an image processing device provided with a coordinate storage means for storing an image together with an image.

[0019]

Further, the present invention has a registration procedure for registering a first face image as a search reference in a computer as a reference image, and a second extraction procedure for extracting a second face image from an input image input from an image storage device. , The face image search procedure for searching the reference image of the same person as the second face image, when the corresponding reference image is extracted by the face image search means, the name of the person added to the corresponding reference image, the shooting year It is a program for executing a storage procedure for storing at least one of them together with a second image, and a display procedure for displaying the corresponding reference image in association with the second image.

[0020]

BEST MODE FOR CARRYING OUT THE INVENTION FIG. 1 is a block diagram showing a configuration of an image processing apparatus according to the present invention.

[0021]

This image processing device provides various data to the image processing unit 1 that searches for images, the display device 2 that displays processed images, and the image processing unit 1, which are peripheral terminals of the image processing unit 1. Alternatively, an operation input unit 3 for inputting an operation instruction or the like, a printer 4 for printing a processed image or the like, an image pickup device 5 for capturing a person image of a reference reference image, and an image to be searched are recorded. It is composed of an image recording medium 6.

[0022]

Then, in the image processing unit 1, an input / output control unit 10 which is an interface of each processing function of the image processing unit 1 which exchanges signals with these peripheral terminals, and a registration unit 11 which registers a reference image as a search reference. , Image storage processing unit 12 that creates additional information related to the search of the image to be searched and stores it inside the image processing unit 1, search unit 13 that searches for the image taken by the person in the reference image, and the image. A display unit 14 that displays and also displays information added to the image in association with each other, an extraction recognition unit 15 that extracts a person's face from the image or recognizes an individual, and a print processing unit that aggregates and prints the image and additional information. 16 is provided.

[0023]

Further, the registration unit 11 creates a face image which is an image obtained by extracting a person from the image input from the image recording medium 6 and extracting the face portion of the person based on the image, and registers the image as a reference image. The designated registration unit 11a and the new registration unit 11b that creates a face image based on the image captured from the image pickup device and registers it as a reference image are provided, and the search unit 13 is provided with a person of the reference image designated in the image. A reference image designation search unit 13a is provided to check whether or not a person is photographed and extract a corresponding image, and the extraction recognition unit 15 identifies a person's face part from the image and extracts the face image. A face extraction unit 15a and an individual recognition unit 15b for collating and recognizing whether or not the face of the reference image is in the designated image are provided.

[0024]

Further, the image processing unit 1 is provided with a storage unit 20 for storing information necessary for the operation of each of these functions, and the storage unit 20 includes an image storage unit 21 for storing an image to be searched, and a search unit. A reference image storage unit 22 for storing a reference reference image is provided.

[0025]

Next, the operation of each processing function constituting the image processing apparatus will be described.

When the operator turns on the power of the image processing device or performs the initial operation from the operation input unit 3, the menu screen is displayed on the display unit 2.

[0026]

FIG. 2 is a menu screen showing the processing function of the image processing apparatus.

[0027]

The processing function of this image processing device is composed of four functions: a registration mode, an image storage mode, a search mode, and an image display mode.

Then, on this menu screen, the image designation registration button 30 and the new registration button 31 are displayed in the registration mode, the image storage processing button 32 is displayed in the image storage mode, and the reference image designation search button 33 is displayed in the search mode. The image display button 34 is displayed in the image display mode.

[0028]

When the operator intends to register the reference image, he / she connects the image recording medium 6 on which the photographed image of the person is recorded to the image processing unit 1 and operates the image designation registration button 30 on the menu screen to specify the image. The registration unit 11a is activated to perform the registration process of the reference image.

[0029]

FIG. 3 is a flow chart showing a schematic operation procedure of the image designation registration unit 11a.

[0030]

This image designation registration function is a function of creating a reference image from an image recorded on an external image recording medium 6, and also has a function of determining whether or not it can be adopted as a reference image and a function of adding information. ing.

The image recorded on the image recording medium 6 is an image captured by the image pickup device 5 or another image pickup device.

[0031]

The operator selects an image of a person to be registered as a reference image from the thumbnail images of the images recorded on the image recording medium 6 displayed on the display unit 2 (S1).

[0032]

The image designation registration unit 11a extracts the image selected by the operator from the image recording medium 6 and displays it on the display unit 2 (S2), and at the same time, the face extraction unit 15a is used to extract the face image of a specific person from the image. To start.

The face extraction unit 15 extracts the face image of the person captured in the image (S3), and returns the result to the image designation registration unit 11a.

[0033]

FIG. 4 is a diagram showing a face extraction result by the face extraction unit 15a.

[0034]

A frame is displayed on the original image so as to surround the face of the person extracted by the face extraction unit 15.

When the operator selects a person to be registered as a reference image from the operation input unit 3 (S4), the image designation registration unit 11a determines whether the face image of the selected person is appropriate as a reference image (S5). ..

[0035]

For example, if the face part is covered with hair or a hat and only a small area is shown, or if the eyes are closed, the face image is inappropriate, and in such a case, it is not appropriate for the display unit 2. Warning is displayed and the reason for improperness is displayed (S7).

When it is determined that the face image is appropriate (S6), the information input screen in which the face size is adjusted to a predetermined size is displayed on the display unit 2 (S8).

[0036]

FIG. 5 is a diagram showing a configuration of an information input screen.

[0037]

This information input screen is provided with a resized face image and additional information input fields such as a name, date of birth, date of shooting, and date of registration, which will be used as information for searching later.

If the information has already been input along with the original image, the shooting date may be displayed, and the registration date may be configured to set the date of the day in advance. ..

[0038]

When the operator inputs these information (S9) and operates the registration button, the image designation registration unit 11a registers the face image and additional information in the reference image storage unit 22 (S10).

Then, when the image to be processed still remains (S11), the above procedure is repeated.

Here, registration means storing in association with an identification code for identifying a reference image.

[0039]

When the operator intends to register the reference image using the image pickup device 5, the new registration section 11b is activated when the image pickup device 5 is connected to the image processing section 1 and the new registration button 31 on the menu screen is operated. Register the reference image.

[0040]

FIG. 6 is a flow chart showing a schematic operation procedure of the new registration unit 11b.

[0041]

This new registration function is a function of creating a reference image from a person image captured from the image pickup apparatus 5.

First, the new registration unit 11b outputs a template for defining an image of a person to the image pickup device 5 (S15).

[0042]

FIG. 7 is a diagram showing a person image displayed on the display unit of the image pickup apparatus 5.

[0043]

The photographer of the image pickup apparatus 5 can easily obtain an appropriate face image by setting the size and orientation of the person according to this template and taking a picture.

The person image taken in this way is sent to the new registration unit 11b, and the new registration unit 11b receives the imaging data from the image pickup device 5 and displays it on the display unit 2 (S16), and extracts the face image of the specific person from the image. The face extraction unit 15a is activated in order to make the face extraction unit 15a.

The face extraction unit 15 extracts the face image of the person captured in the image (S17), and returns the result to the new registration unit 11b.

[0044]

Next, the new registration unit 11b determines whether or not the extracted face image is appropriate as a reference image (S18).

For example, if the face part is covered with hair or a hat and is small, if the eyes are closed, etc., the face image is inappropriate, and in such a case, a warning is displayed on the display unit 2 to the effect that it is not appropriate. The inappropriate reason is displayed (S20).

This allows the photographer to easily retake an appropriate facial image.

When it is determined that the face image is appropriate (S19), the information input screen shown in FIG. 5 in which the face size is adjusted to a predetermined size is displayed on the display unit 2 (S21).

[0045]

If the operator inputs additional information such as the name, date of birth, shooting date, registration date, etc., which will be the information at the time of search described later (S22), and operates the registration button, the new registration unit 11b will be displayed. The face image and additional information are registered in the reference image storage unit 22 (S23).

Then, when the image to be processed still remains (S24), the above procedure is repeated.

[0046]

If the reference image registration process is configured in this way, it can be easily registered as a reference image without extracting a plurality of indexes representing the characteristics of a person, and an inappropriate face image can be removed to ensure recognition processing. It becomes possible to enhance the sex.

[0047]

Next, a process for accumulating and storing an image input from an external image recording device or the like in the image storage unit 21 of the image processing device will be described.

When the operator connects the external terminal to the image processing unit 1 and operates the image storage processing button 32 on the menu screen, the image storage processing unit 12 is activated to perform the image storage processing.

[0048]

8 and 9 are flow charts showing a schematic operation procedure of the image storage processing unit 12.

[0049]

This image storage processing function extracts in advance the search information required for the subsequent search processing when inputting an image, and stores the image together with the image.

[0050]

The image storage processing unit 12 receives image data from the image pickup device 5 or the image recording medium 6, displays it on the display unit 2 (S30), and displays the face extraction unit 15a in order to extract a face image of a specific person from the image (S30). to start.

The face extraction unit 15a extracts the face image of the person captured in the image (S32), and returns the result to the image storage processing unit 12.

[0051]

The image storage processing unit 12 determines the position information (area information or center coordinates) of each face in the image data (S33).

[0052]

FIG. 10 is a diagram showing a method of determining the position information of each face in the image data.

[0053]

(1) of FIG. 10 shows the area information of the face.

This information represents the area where the face exists, for example, as an area surrounded by a polygon consisting of a plurality of coordinate points.

On the other hand, FIG. 10 (2) shows the center coordinates of the face.

This information represents the position in the image data in which the face exists, for example, as the coordinates of one point indicating the substantially center position of the face area.

These face position information are treated as information for specifying the position of a person's face in the display process.

[0054]

Subsequently, the image storage processing unit 12 activates the personal recognition unit 15b.

The personal recognition unit 15b collates the face image extracted by the face extraction unit 15a with the face image of the reference image, and executes a personal recognition process for checking whether or not the face image can be recognized as a person in the reference image (S34).

[0055]

When the face image can be recognized as a specific person in the reference image (S35), the recognized person in the image data is attached with an identification code of the reference image and displayed on the display unit (S36) to identify the reference image. If it could not be recognized as the person in (S35), what about the person in the image data that could not be recognized?

A reference numeral is attached and the display is displayed on the display unit (S37).

[0056]

The above personal recognition process is repeatedly collated for all the persons included in the image data, and when all the faces are collated (S38), the recognition screen is displayed on the display unit 2 (S39).

[0057]

FIG. 11 is a diagram showing the configuration of the recognition screen.

[0058]

In this recognition screen, each person in the image data is given the above-mentioned identification code, and the reference image is displayed at the bottom of the screen in thumbnail format.

Each person is associated with a reference image via this identification code.

Then, by displaying the association in this way, the operator can easily confirm the recognition result.

The operator compares the person in the image data with the person in the reference image based on the identification code, and determines whether or not it is necessary to modify the identification code such as change or addition (S40).

[0059]

When a change or addition is necessary, the operation is performed by selecting the change or addition from the menu (not shown) on the image (S41).

[0060]

When change is selected (S42), a person on the image is first identified by operating a mouse or the like at the face position (or in the face area), and then a reference image to be associated with the person is specified. It is specified using a mouse or the like (S43).

By this operation, the identification code attached to the person on the image data is changed to the identification code of the specified reference image.

[0061]

When addition is selected (S42), a person on the image is identified by operating a mouse or the like at the face position (or in the face area), and then a blank reference image for which the person is to be registered is to be registered. The columns (columns having the identification code "0" in FIG. 11) are associated with each other using a mouse or the like (S44).

By this operation, the face portion of the person on the image data is cut out and displayed for the reference image (S45).

Then, information such as a name is input in the additional information input field displayed at the same time, and the additional registration operation is performed (S46).

Then, the identification code of the added reference image is attached to the person on the image and displayed as a new identification code.

The additional registration operation may be configured using the information input screen shown in FIG.

[0062]

This change addition operation is repeated as many times as necessary, and when all the change addition processing is completed (S47), the personal name and face of the person read from the image data and the reference image are performed by performing the storage operation. The image storage unit 21 stores additional information such as position information (S48).

Then, the above process is repeated for all the input images (S49), and the image storage process is completed.

[0063]

FIG. 12 is a diagram showing a data structure of the image storage unit 21.

[0064]

In the header part, along with the file name of the image, additional information such as shooting date, registration date, person's name, date of birth, face position information, etc. is stored, and the corresponding image data is stored in this image part. For example, it is stored by being compressed by the JPEG method.

[0065]

In this embodiment, a process of accumulating and recording an image input from an external image recording device or the like has been described, but the present invention is not limited to this embodiment, and the device is once subjected to the above-mentioned processing. It is also possible to configure the image stored in the internal image storage unit 21 to be stored and recorded by repeating the same process again.

With this configuration, it is possible to take in additional information about the newly added reference image and perform processing such as searching.

[0066]

Next, the search function will be described.

This function is a function to extract an image containing a person in the reference image and display it as a thumbnail. The image to be searched at this time is a case where it is recorded on an external image recording medium and an internal recording medium. There are two cases when it is recorded in the image recording unit.

[0067]

First, processing of an image recorded on an external image recording medium will be described.

When the external terminal is connected to the image processing unit 1 and the reference image designation search button 33 on the menu screen is operated, the reference image designation search unit 13a is activated to perform the search processing.

[0068]

13 and 14 are flow charts showing a schematic operation procedure of the reference image designation search unit 13a.

[0069]

First, the reference image designation search unit 13a displays a list of reference images shown in FIG. 15 on the display unit 2 (S51).

The operator specifies a person to be searched for on this screen by designating it with a mouse or the like, but at this time, it is also possible to specify a plurality of images (S52).

Then, only the reference image of the specified person is displayed in a list on the display unit 2 (S53).

[0070]

Subsequently, the reference image designation search unit 13a extracts the shooting date from the incidental information of the reference images displayed in the list, and examines whether or not the date is within a predetermined period from the present (S54).

If it is not within the specified period, the reference image is an old image, so a warning message is issued to alert the operator by changing the display color of only the reference image and prompting the re-registration of the new reference image. Output (S55).

With this configuration, it is possible to prevent a problem that the old reference image is not updated as it is.

In addition, the predetermined period may be changed depending on the age of the person concerned.

In other words, it is more appropriate to calculate the age from the date of birth and set a shorter predetermined period because the change in the face is large for children.

[0071]

In this embodiment, the shooting date of the reference image is checked when the person is specified, but the shooting date is always checked when displaying the reference images in a list, not limited to this form. It may be configured to do so.

[0072]

Next, the reference image designation search unit 13a receives image data from the image pickup apparatus 5 or the image recording medium 6, displays it on the display unit 2 (S56), and extracts a face in order to extract a face image of a specific person from the image (S56). Part 15a is activated.

The face extraction unit 15a extracts the face image of the person captured in the image (S57), and returns the result to the reference image designation search unit 13a.

[0073]

If the face image cannot be extracted (S58), a message indicating that the face image cannot be extracted is displayed (S59), and the processing of the next image data is started.

[0074]

When the face image can be extracted (S58), the face image and the reference image are compared and collated, but when the reference image contains a plurality of the same person, the day when the image data is close to the date when the image was taken. Select the reference image of the person with the attachment (S60).

Then, the reference image designation search unit 13a activates the personal recognition unit 15b.

The personal recognition unit 15b collates the face image extracted by the face extraction unit 15a with the face image of the reference image, and executes a personal recognition process for checking whether or not the face image can be recognized as a person in the reference image (S61).

[0075]

When it can be recognized as a specific person in the reference image (S62), the recognized person in the image data is emphasized and stored by, for example, adding a mark (S63).

If it cannot be recognized as a specific person in the reference image (S62), a message indicating that there is no person in the reference image in the image data is displayed on the display unit (S64), and the next image data is processed. ..

[0076]

This process is repeated for all the input image data, and when the processing of all the input image data is completed (S65), the extracted image data is displayed as a list in thumbnail format (S66).

Then, when the operator selects this thumbnail, the image data is displayed in a normal size.

[0077]

With this configuration, it is possible to search for a face image close to the shooting date of the image to be searched as a reference image, so that it is not necessary to search based on other reference images of the same person, and the search time can be reduced. It can be shortened and the search accuracy can be improved.

In addition, the search results can be easily confirmed by providing a function for displaying thumbnails and enlarging the search results.

[0078]

Next, the processing of the image recorded on the internal recording medium will be described.

When the operator operates the reference image designation search button 33 on the menu screen, the reference image designation search unit 13a is activated to start the search process.

[0079]

FIG. 16 is a flow chart showing a schematic operation procedure of the reference image designation search unit 13a.

In the search for the internal image, since the search information has already been extracted by the image storage process described above, the search can be performed at a higher speed than the search for the external image.

[0080]

The reference image designation search unit 13a first performs a reference image selection process, but since this procedure is the same as in steps S51 to S55 described above, detailed description thereof will be omitted.

Subsequently, the reference image designation search unit 13a extracts the information of the header unit for each image of the designated image storage unit 21 (S70).

Then, it is examined whether or not the name or the like described in the additional information of the reference image matches the name or the like in the header information (S71).

If they match (S72), the image is extracted and stored (S73), and if they do not match, it is assumed that there is no person to search for the image, and the process proceeds to the next image data search process.

[0081]

This process is repeated for all the input image data, and when the processing of all the input image data is completed (S74), the extracted image data is displayed as a list in thumbnail format (S75).

Then, when the operator selects this thumbnail, the image data is displayed in a normal size.

[0082]

In this way, the search can be performed at high speed by configuring the search for additional information.

[0083]

Next, a process for displaying the image stored inside on the display unit 2 of the image processing apparatus and outputting the image to the printer 4 will be described.

When the operator operates the image display button 34 on the menu screen, the image display unit 14 is activated to perform image display processing.

[0084]

FIG. 17 is a flow chart showing a schematic operation procedure of the image display unit 14.

[0085]

When the operator specifies an image to be displayed, the image display unit 14 reads the header information and the image data from the image storage unit 21 and displays the image on the display unit 2 (S80).

When the operator moves the pointer by operating a mouse or the like on a specific person in the image data, the image display unit 14 reads the position of the pointer, and the face coordinates or face area information which is the face position data of the header information. (S81).

[0086]

Then, when a correspondence with the face position data of the header information is attached, personal information such as the name of the person is displayed (S82), and further, if the operator moves the pointer over the person and clicks, the person A magnified image of is displayed (S83).

[0087]

Subsequently, when the operator performs an instruction operation to print the displayed image, the image display unit 14 passes the header information read from the image storage unit 21 and the image data to the print processing unit 16 for a printing operation. Is started (S86).

Then, the print processing unit 16 prints additional information such as a date and a personal name in the header information together with the image (S87).

[0088]

In this way, in this function, since the additional information has already been extracted by the image storage process described above, the name of the person can be displayed by simply placing the pointer on the image of the person, and by clicking on the person, the additional information can be displayed. A magnified image of a person can be displayed, and if it is printed out, not only the image but also additional information such as the name of the person in the picture can be printed.

Therefore, related information can be aggregated and referred to by simple handling.

[0089]

Although the present embodiment has been described for the purpose of functioning a digital album for captured images, the present invention is not limited to this embodiment, and personal authentication and photo collation for recognizing and identifying a face are not limited to this embodiment. It can be widely applied to technical fields such as.

[0090]

[Effects of the Invention] As described above, if the image storage and recording means according to the present invention is used for configuration, a person can be identified by a simple operation and an image can be searched at high speed.

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CLAIMS JP2003150932A

1.

In an image processing device having an image search means, a registration means for registering a first face image as a search reference as a reference image and a second face image for extracting a second face image from an input image input from the image storage device. When the corresponding reference image is extracted by the extraction means, the face image search means for searching the reference image of the same person as the second face image, and the face image search means, the reference image is added to the reference image. It is characterized by having a storage means for storing at least one of the name and the shooting year of the person in question together with the second image, and a display means for displaying the corresponding reference image in association with the second image. Image processing device.

2.

The image processing apparatus according to claim 1 or 2, further comprising a correction means for correcting the association between the reference image and the second image.

3.

The image processing apparatus according to any one of claims 1 to 3, further comprising an additional registration means for additionally registering the second face image as a new reference image.

4.

A claim comprising a warning means for outputting an instruction prompting to register a new reference image when the date on which the reference image was taken is more than a predetermined date past the current date. The image processing apparatus according to any one of items 1 to 4.

5.

The face image search means selects a reference image having a shooting date close to the shooting date of the second image, and searches for the second face image based on the reference image. The image processing apparatus according to any one of claims 1 to 5, wherein the image processing apparatus is provided.

6.

It is characterized by being provided with a coordinate storage means for storing at least one of coordinate data representing a position near the center of the face in the second face image and coordinate data representing a face area together with the second image. The image processing apparatus according to any one of claims 1 to 6.

7.

In the image processing program of an image processing device having an image search means, a registration procedure for registering a first face image as a search reference in a computer as a reference image, and a second face from an input image input from an image storage device. The second extraction procedure for extracting an image, the face image search procedure for searching the reference image of the same person as the second face image, and the corresponding reference image when the corresponding reference image is extracted by the face image search means. To execute the name of the person added to the image, the storage procedure for storing at least one of the shooting years together with the second image, and the display procedure for displaying the corresponding reference image in association with the second image. Program.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/014,641	12/23/2020	10176848	2638-19.06	3601

177632 7590 03/29/2021

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ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
03/29/2021	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Date: March 29, 2021

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90/014,641
PATENT NO. : 10,176,848 B2
ART UNIT : 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Decision on Petition for Extension of Time in Reexamination	**Application No.** 90/014,641	**Applicant(s)** 10,176,848 B2	
	Examiner Behzad PEIKARI	**Art Unit** 3992	

1. THIS IS A DECISION ON THE PETITION FILED March 25, 2021.

2. THIS DECISION IS ISSUED PURSUANT TO:
   - A. ☒ 37 CFR 1.550(c) – The time for taking any action by a patent owner in a third party requested *ex parte* reexamination proceeding will be extended only for sufficient cause and for a reasonable time specified.
   - B. ☐ 37 CFR 1.550(c) – The time for taking action by a patent owner in a patent owner requested *ex parte* reexamination proceeding will only be extended for more than two months for sufficient cause and for a reasonable time specified.
   - C. ☐ 37 CFR 1.956 – The time for taking any action by a patent owner in an *inter partes* reexamination proceeding will be extended only for sufficient cause and for a reasonable time specified.

   The petition is before the Central Reexamination Unit for consideration.

3. FORMAL MATTERS
   Patent Owner requests that the period for filing an optional Patent Owner's Statement after the "***Order Granting Request for Ex Parte Reexamination***" mailed on January 29, 2021, which is a two (2) month period pursuant to 37 CFR 1.530(b) (i.e., due March 29, 2021), be extended by an additional one (1) month (i.e., due April 29, 2021).

   - A. Petition fee per 37 CFR §1.17(g)):
     - i. ☒ Petition includes authorization to debit a deposit account.
     - ii. ☐ Petition includes authorization to charge a credit card account.
     - iii. ☐ Other: _____.
   - B. ☒ Proper certificate of service was provided. (Not required in reexamination where patent owner is requester.)
   - C. ☒ Petition was timely filed.
   - D. ☒ Petition properly signed.

4. DECISION (See MPEP 2265 and 2665)
   - A. ☒ Granted or ☐ Granted-in-part for **one (1) month**. (See 37 CFR 1.550(c) and 37 CFR 1.956).
     - i. ☒ Other/comment: See CONCLUSION below.
   - B. ☐ Dismissed because:
     - i. ☐ Formal matters (See unchecked box(es) (A, B, C and/or D) in section 4 above).
     - ii. ☐ Petitioner failed to provide a factual accounting of reasonably diligent behavior by all those responsible for preparing a response to the outstanding Office action within the statutory time period.
     - iii. ☐ Petitioner failed to explain why, in spite of the action taken thus far, the requested additional time is needed.
     - iv. ☐ The statements provided fail to establish sufficient cause to warrant extension of the time for taking action (See attached).
     - v. ☐ The petition is moot.
     - vi. ☐ Other/comment: _____

5. CONCLUSION: **The time period for filing an optional Patent Owner's Statement after the mailing of the January 29, 2021 "*Order Granting Request for Ex Parte Reexamination*" is hereby extended by one (1) additional month from March 29, 2021 to April 29, 2021. Accordingly, the optional Patent Owner's Statement is now due by the end of the day on Thursday, April 29, 2021**.

   Telephone inquiries with regard to this decision should be directed to Gay Ann Spahn at 571-272-7731 in the CRU.

	/Gay Ann Spahn/ Supervisory Patent Reexamination Specialist Central Reexamination Unit

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and accurate copy of the foregoing PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. § 1.550(c) is being served in its entirety via First Class Mail, postage prepaid, on the following counsel of record:

Adam P. Seitz & Jennifer C. Bailey
ERISE IP, P.A.
7015 College Boulevard, Suite 700
Overland Park, Kansas 66211

on this 25th day of March, 2021.

/Brooklyn Grossbard/
Brooklyn Grossbard

Samsung - Exhibit 1004 - Page 260

Docket No.: 009379.00008\US
(*EX PARTE* REEXAMINATION)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re *Ex parte* Reexamination of:
U.S. Patent No.: 10,176,848

Examiner: Peikari, Behzad

Control No.: 90/014,641

Group Art Unit: 3992

Inventor: Mari Yoshida

Confirmation No.: 3601

Application Serial No.: 14/478,020
Filed: September 5, 2014
Issue Date: January 8, 2019

For: Recording and Reproducing Apparatus and Method Thereof

PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. § 1.550(c)

Mail Stop *Ex Parte* Reexam
ATTN: Central Reexamination unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Patent Owner respectfully petitions for an extension of the due date for filing a Patent Owner Statement in the above-captioned *ex parte* reexamination. The Order granting the reexamination dated January 29, 2021 set a two month period for filing of an (optional) Patent Owner Statement which would expire March 29, 2021. A one month extension of this deadline, to April 29, 2021, for good cause shown, is respectfully requested.

This is one of twelve (all now granted) reexaminations requested by Apple against ten patents owned by Maxell, Ltd. within the past several months. These reexaminations, the patent, their request filing dates, the date of a grant of the request and the Patent Owner Statement deadline are listed in attached Appendix A.

Each of these patents was asserted by Maxell against Apple in district court and/or ITC litigation (venue(s) of assertion indicated in Appendix A). The subject '848 patent was asserted in the ITC case before being dropped in February of 2021: Investigation No. 337-TA-1215. As trial in the EDTX case started on March 22, 2021, the parties reached, late in the day, a settlement of the disputes between them. Joint motions to dismiss were subsequently filed in each of these three actions, on March 24, 2021. Copies of the dismissal papers are attached as Appendices B-D. In addition, in accordance with the agreement, the parties will be jointly moving to terminate the co-pending IPRs. As pertains to the instant reexamination/patent, IPR2021-00367 brought by Apple is at a pre-institution stage.

Patent owner Maxell has been consumed with preparing for and conducting the EDTX trial in one of the now-settled disputes with Apple that led to the instant reexaminations. The work leading up to trial has understandably limited Maxell's availability for consultation on the reexaminations of their patents. With the settlement that just occurred, such a constraint is now lifted.

The undersigned's law-firm Banner & Witcoff, Ltd. was newly engaged to represent Maxell in connection with these reexaminations as the USPTO began granting the requests. Its attorneys, including the undersigned, have worked diligently to come up to speed on the patents and their prosecution histories, and in evaluation of the grounds asserted in the reexamination requests since (and before) the Orders granting the reexaminations issued. Substantial time and effort has also been devoted to a review and consideration of voluminous documents from the related district court, ITC and IPR proceedings.

Reflecting the scale of the overall effort, the undersigned is heading-up a team of nine Banner & Witcoff attorneys, and multiple paralegals, collectively working on these reexamination matters. Three Banner & Witcoff attorneys are principally involved with, and have devoted substantial time to, this particular reexamination over the past couple of months.

Patent Owner desires for this reexamination to proceed to completion expeditiously, efficiently and justly. Having studied the matter, Patent Owner and its counsel believe at this point that the filing of a (optional) Patent Owner Statement herein may be a useful means toward achieving these goals. The requested additional time is believed to be reasonably necessary to allow counsel to complete and file a Patent Owner Statement in optimal form while balancing

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other pressing work demands. While Banner & Witcoff attorneys have been diligent in preparing remarks for a Patent Owner Statement, resource limitations associated with the now-settled dispute between Apple and Maxell have limited Patent Owner's ability to prepare a complete and thorough Patent Owner Statement for consideration by the Office.

The amount of additional time requested (one month) for preparing and filing a Patent Owner Statement is believed reasonable and justified in the circumstances, consistent with the need for the reexamination to be conducted with "special dispatch." Patent Owner respectfully submits that there is less of any countervailing concern here given the settlement of the disputes between it and Requester Apple. With this development, and insofar as extensions of time are concerned, this third party-requested *ex parte* reexamination has become more akin to a patent owner requested or Director initiated reexamination, which would have a two-month extension of time available as a matter of right. *See* 37 C.F.R. §1.550(c)(3) (as amended in 2013). *See also* MPEP 2265.

In the circumstances, it is respectfully submitted that good and sufficient cause has been shown for the grant of the requested reasonable extension of time (1 month) to allow Patent Owner to complete and file a Patent Owner Statement. Please charge the petition fee due under 37 C.F.R. § 1.17(g) to our Deposit Account No. 19-0733.

Respectfully submitted,

By: /Scott M Kelly/
Scott M. Kelly
Registration No. 65,121

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Dated: March 25, 2021

Encl.: Appendices A-D

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and accurate copy of the foregoing PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. § 1.550(c) is being served in its entirety via First Class Mail, postage prepaid, on the following counsel of record:

Adam P. Seitz & Jennifer C. Bailey
ERISE IP, P.A.
7015 College Boulevard, Suite 700
Overland Park, Kansas 66211

on this 25th day of March, 2021.

/Brooklyn Grossbard/
Brooklyn Grossbard

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Appendix A

Appendix A
Apple Requested *Ex Parte* Reexaminations
Of Maxell Patents

EPR	EPR Filing Date	Patent	Asserted In	Decision on Request	Optional Patent Owner Statement Due Date
90/014,628	12/10/2020	8,339,493	EDTX	Request Granted 1/28/2021	3/28/2021
90/014,631	12/15/2020	7,203,517	ITC/WDTX	Request Granted 1/15/2021	past
90/014,632	12/18/2020	6,408,193	EDTX	Request Granted 2/1/2021	4/1/2021
90/014,638	12/23/2020	8,982,086	ITC/WDTX	Request Granted 1/22/2021	past
90/014,639	12/23/2020	6,748,317	EDTX	Request Granted 2/16/2021	4/16/2021
90/014,662	1/27/2021	6,748,317	EDTX	Request Granted 2/12/2021	4/12/2021
90/014,640	12/23/2020	6,580,999	EDTX	Request Granted 1/21/2021	past
90/014,661	1/27/2021	6,580,999	EDTX	Request Granted 2/26/2021	4/26/2021
90/014,641	12/23/2020	10,176,848	ITC/WDTX	Request Granted 1/29/2021	3/29/2021
90/014,651	1/12/2021	10,129,590	ITC/WDTX	Request Granted 2/10/2021	4/10/2021
90/014,673	2/3/2021	6,430,498	EDTX	Request Granted 3/9/2021	5/9/2021
90/014,678	2/12/2021	7,116,438	EDTX	Request Granted 3/4/2021	5/4/2021

Appendix B

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

MAXELL, LTD., *Plaintiff*, v. APPLE INC., *Defendant*.	Case No. 6:20-cv-00646-ADA

JOINT MOTION TO DISMISS

Pursuant to Rule 41(a) of the Federal Rules of Civil Procedure, Plaintiff Maxell, Ltd. ("Maxell") and Defendant Apple Inc. (Maxell and Apple are collectively, "the Parties"), hereby jointly move for dismissal with prejudice of all claims by Maxell against Apple. The Parties further move for an order that all costs and expenses relating to this litigation up to the time of dismissal shall be borne by the party incurring same. A proposed order accompanies this motion.

Respectfully submitted,

Dated: March 24, 2021

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Dated: March 24, 2021

Respectfully Submitted

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Counsel for Defendant Apple Inc.

CERTIFICATE OF SERVICE

The undersigned certifies that all counsel of record who are deemed to have consented to electronic service are being served this 24th day of March, 2021, with a copy of this document via the Court' s CM/ECF system per Local Rule CV-5(a)(3).

/s/ Robert S. Harrell
Robert S. Harrell

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

MAXELL, LTD., *Plaintiff*, v. APPLE INC., *Defendant*.	Case No. 6:20-cv-00646-ADA

PROPOSED ORDER

Before the Court is the Parties' Joint Motion to Dismiss. Plaintiff MAXELL, LTD. and Defendant APPLE INC., announced to the Court that they have settled their respective claims for relief asserted in this cause. The Court, having considered this request, is of the opinion that their request for dismissal should be granted.

IT IS THEREFORE ORDERED that all claims for relief asserted against APPLE INC. by MAXELL, LTD. herein are dismissed, with prejudice; and

IT IS FURTHER ORDERED that all attorneys' fees, costs of court and expenses shall be borne by each party incurring the same.

SO ORDERED this the _____ day of _____, 2021.

_____
HON. ALAN D. ALBRIGHT
UNITED STATES DISTRICT JUDGE

Appendix C

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TEXARKANA DIVISION

MAXELL, LTD., *Plaintiff*, v. APPLE INC., *Defendant*.	Case No. 5:19-cv-00036-RWS **LEAD CASE** **JURY TRIAL DEMANDED**

JOINT MOTION TO DISMISS

Pursuant to Rule 41(a) of the Federal Rules of Civil Procedure, Plaintiff Maxell, Ltd. ("Maxell") and Defendant Apple Inc. (Maxell and Apple are collectively, "the Parties"), hereby jointly move for dismissal with prejudice of all claims by Maxell against Apple. The Parties further move for an order that all costs and expenses relating to this litigation up to the time of dismissal shall be borne by the party incurring same. A proposed order accompanies this motion.

Respectfully submitted,

Dated: March 24, 2021

/s/ *Jamie B. Beaber*

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Counsel for Plaintiff Maxell, Ltd.

Dated: March 24, 2021

Respectfully Submitted

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COUNSEL FOR DEFENDANT APPLE INC.

CERTIFICATE OF SERVICE

The undersigned certifies that all counsel of record who are deemed to have consented to electronic service are being served this 24th day of March, 2021, with a copy of this document via the Court' s CM/ECF system per Local Rule CV-5(a)(3).

/s/ Jamie B. Beaber
Jamie B. Beaber

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TEXARKANA DIVISION

MAXELL, LTD., *Plaintiff*, v. APPLE INC., *Defendants*.	Case No. 5:19-cv-00036-RWS **JURY TRIAL DEMANDED**

PROPOSED ORDER

Before the Court is the Parties' Joint Motion to Dismiss. Plaintiff MAXELL, LTD. and Defendant APPLE INC., announced to the Court that they have settled their respective claims for relief asserted in this cause. The Court, having considered this request, is of the opinion that their request for dismissal should be granted.

IT IS THEREFORE ORDERED that all claims for relief asserted against APPLE INC. by MAXELL, LTD. herein are dismissed, with prejudice; and

IT IS FURTHER ORDERED that all attorneys' fees, costs of court and expenses shall be borne by each party incurring the same.

Appendix D

UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

Before the Honorable Dee Lord
Administrative Law Judge

In the Matter of: **CERTAIN MOBILE ELECTRONIC DEVICES AND LAPTOP COMPUTERS**	Investigation No. 337-TA-1215

JOINT MOTION TO TERMINATE THE INVESTIGATION BASED ON SETTLEMENT

Pursuant to 19 C.F.R. § 210.21(b), Complainant Maxell, Ltd. ("Maxell") and Respondent Apple Inc. ("Apple") respectfully move to terminate the Investigation based on settlement.

Pursuant to 19 C.F.R. § 210.21(b)(1), Maxell and Apple state that there are no other agreements, written or oral, express or implied, relating to the subject matter of this Investigation.

A redacted, public version of the Settlement Agreement is attached hereto as Exhibit 1 to this motion. An unredacted copy of the agreement is being filed separately as a confidential submission because it contains Confidential Business Information within the meaning of Commission Rule 201.6. Accordingly, the parties request that the unredacted Settlement Agreement be treated as containing the parties' Confidential Business Information under the Protective Order.

There is no longer a basis to continue this Investigation as the Settlement Agreement resolves the disputes identified in the Complaint. Because such issues are no longer in dispute, the public interest and administrative economy will be served by granting this motion and preserving resources for both the Commission and the private parties. For this same reason,

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motions to terminate an investigation based on settlement are routinely granted and not reviewed by the Commission. *See, e.g., Certain Child Carriers, Components Thereof and Products Containing the Same*, Inv. No. 337-TA-1154, Order No. 33 at 2-3 (Nov. 19, 2019); *Certain Lithography Machines and Systems, and Components Thereof (II)*, Inv. No. 337-TA-1129, Order No. 17 at 1- 2 (Mar. 18, 2019).

Moreover, termination of this Investigation will not adversely affect the public health and welfare, competitive conditions of the U.S. economy, the production of like or directly competitive articles in the United States, or U.S. consumers.

Based on the foregoing, Maxell and Apple respectfully request that the Administrative Law Judge issue an initial determination terminating this Investigation.

Ground Rule 3.2 Certification

Pursuant to Ground Rule 3.2, the parties have discussed this motion multiple times since March 22, 2021, resulting in the filing of this Joint Motion. Maxell discussed this motion with Staff on March 23, 2021. Staff will take a position after reviewing the papers.

Dated: March 24, 2021

Respectfully submitted,

/s/ Jamie B. Beaber

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Counsel for Respondent Apple, Inc.

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CERTAIN MOBILE ELECTRONIC DEVICES AND LAPTOP COMPUTERS
Inv. No. 337-TA-1215

CERTIFICATE OF SERVICE

I, Robert E. Rude II, hereby certify that on March 24th, 2021, a copy of the foregoing **JOINT MOTION TO TERMINATE THE INVESTIGATION BASED ON SETTLEMENT (PUBLIC VERSION)** document was served upon the following parties as indicated:

The Honorable Dee Lord Administrative Law Judge U.S. International Trade Commission 500 E Street, S.W. Washington, DC 20436	☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Electronic Filing (EDIS) ☐ Via Overnight Courier ☐ Via Fax ☑ Via E-mail *(PDF)* *Edward.Jou@usitc.gov* *Michael.Maas@usitc.gov*
Lisa Murray, Esq. Office of Unfair Import Investigations U.S. International Trade Commission 500 E Street, S.W. Washington, DC 20436	☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Courier ☐ Via Facsimile ☑ Via E-mail *(PDF)* *Lisa.Murray@usitc.gov*
Mark Fowler Monica De Lazzari DLA Piper LLP (US) 2000 University Avenue East Palo Alto, CA 94303-2214 Tel: 650.833.2000 Fax: 650.833.2001 Sean C. Cunningham Erin P. Gibson Peter Maggiore DLA Piper LLP (US) 401 B Street, Suite 1700 San Diego, CA 92101 Tel: 619.699.2700 Fax: 619.699.2701 Aaron Fountain DLA Piper LLP (US)	☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Courier ☐ Via Facsimile ☑ Via E-mail *(PDF)* *Sean.Cunningham@us.dlapiper.com* *dlaapple-maxellitc@dlapiper.com* *hcannom@wscllp.com*

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/s/ Robert E. Rude II
Robert E. Rude II
MAYER BROWN LLP

Electronic Patent Application Fee Transmittal

Application Number:	90014641
Filing Date:	23-Dec-2020
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	10176848
Filer:	Scott M Kelly/Brooklyn Grossbard
Attorney Docket Number:	2638-19.06

Filed as Large Entity

Filing Fees for ex parte reexam

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
PETITION FEE- 37 CFR 1.17(G) (GROUP II)	1463	1	220	220
Miscellaneous:				
		Total in USD ($)		**220**

Electronic Acknowledgement Receipt

EFS ID:	42285878
Application Number:	90014641
International Application Number:	
Confirmation Number:	3601
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	10176848
Customer Number:	177632
Filer:	Scott M Kelly/Brooklyn Grossbard
Filer Authorized By:	Scott M Kelly
Attorney Docket Number:	2638-19.06
Receipt Date:	25-MAR-2021
Filing Date:	23-DEC-2020
Time Stamp:	17:14:01
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$220
RAM confirmation Number	E20213OH14183677
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Reexam Certificate of Service	Certificate_of_Service_-_Petition_for_EOT_21150036.PDF	95785 0a569c60cddaadb5dddbea89e15c67a6ff53a3e6	no	1
Warnings:					
Information:					
2	Reexam Request for Extension of Time	Petition_for_Extension_of_Time_with_Appendices_-_009379_21149874.PDF	413014 496ab4b546fa7834bf241208935adf1e5c4bcf3d	no	25
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30234 ca043731dbacb997c74bca87dd166929acad3a2d	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	539033		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
90/014,641	12/23/2020	10176848	2638-19.06

CONFIRMATION NO. 3601

POWER OF ATTORNEY NOTICE

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Date Mailed: 02/25/2021

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/18/2021.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/pavolpe/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
90/014,641	12/23/2020	10176848	2638-19.06

CONFIRMATION NO. 3601

POA ACCEPTANCE LETTER

177632
BANNER & WITCOFF, LTD.
1100 13th STREET, N.W.
SUITE 1200
WASHINGTON, DC 20005-4051

OC000000123540436

Date Mailed: 02/25/2021

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/18/2021.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/pavolpe/

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and accurate copy of the REEXAMINATION PATENT OWNER POWER OF ATTORNEY and STATEMENT UNDER 37 CFR 3.73(c) filed in Reexamination Control Number 90/014,641 on February 18, 2021 is being served in its entirety via First Class Mail, postage prepaid, on the following counsel of record:

Adam P. Seitz & Jennifer C. Bailey
ERISE IP, P.A.
7015 College Boulevard, Suite 700
Overland Park, Kansas 66211

on this 22 day of February, 2021.

/Brooklyn Grossbard/
Brooklyn Grossbard

Electronic Acknowledgement Receipt

EFS ID:	41982000
Application Number:	90014641
International Application Number:	
Confirmation Number:	3601
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	10176848
Customer Number:	177632
Filer:	Scott M Kelly/Brooklyn Grossbard
Filer Authorized By:	Scott M Kelly
Attorney Docket Number:	2638-19.06
Receipt Date:	22-FEB-2021
Filing Date:	23-DEC-2020
Time Stamp:	13:18:48
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Reexam Certificate of Service	CERTIFICATE_OF_SERVICE_-_009379_21060750.pdf	21080 e811aa68d24bf41c9b17194935851b8a1f321f18	no	1

Warnings:

Information:	
Total Files Size (in bytes):	21080

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 3601

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
90/014,641	12/23/2020	386	3992	2638-19.06

APPLICANTS

INVENTORS

10176848, Residence Not Provided;
MAXELL, LTD PATENT OWNER, KYOTO, JAPAN;
APPLE INC (3RD. PTY. REQ.), CUPERTINO, CA;
ERISE IP P.A. (GENERAL), OVERLAND PARK, KS

**** CONTINUING DATA ***************************

This application is a REX of 14/478,020 09/05/2014 PAT 10176848 *
which is a CON of 12/430,185 04/27/2009 PAT 9159368
(*)Data provided by applicant is not consistent with PTO records.

**** FOREIGN APPLICATIONS ***************************

JAPAN 14/478,020 05/19/2008

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

Foreign Priority claimed ❑ Yes ❑ No 35 USC 119(a-d) conditions met ❑ Yes ❑ No Verified and Acknowledged _____ Examiner's Signature	❑ Met after Allowance _____ Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
				20	4

ADDRESS

BANNER & WITCOFF, LTD.
1100 13th STREET, N.W.
SUITE 1200
WASHINGTON, DC 20005-4051
UNITED STATES

TITLE

RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF

FILING FEE RECEIVED		
12600	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	❑ All Fees ❑ 1.16 Fees (Filing) ❑ 1.17 Fees (Processing Ext. of time) ❑ 1.18 Fees (Issue) ❑ Other _____ ❑ Credit

PTO/AIA/81B (07-13)
Approved for use through 03/31/2021. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number

REEXAMINATION OR SUPPLEMENTAL EXAMINATION – PATENT OWNER POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS FOR REEXAMINATION OR SUPPLEMENTAL EXAMINATION AND PATENT

Control Number(s)	90/014,641
Filing Date(s)	December 23, 2020
First Named Inventor	Yokohama Mari Yoshida
Title	RECORDING AND REPRODUCING APPARATUS ...
Patent Number	10,176,848
Examiner Name	Behzad Peikari
Attorney Docket No(s)	009379.00008\US

I. Power of Attorney. This form may be used to change the Power of Attorney in a reexamination or supplemental examination proceeding (or multiple proceedings where merged). This form may also be used to change the Power of Attorney in the patent file; in such a case, a copy of this form will be placed in both the patent file and the reexamination or supplemental examination proceeding.

A. Revocation of Previous Power of Attorney. I hereby revoke all previous patent owner powers of attorney, if any, given:

☒ in the above-identified reexamination or supplemental examination proceeding control number(s) (more than one may be changed only if the proceedings are merged).

☐ in the file of the above-identified patent.

(check BOTH boxes if change in BOTH the patent file and the reexamination or supplemental examination proceeding is requested).

B. Designation of Power of Attorney.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s) to prosecute the proceeding(s)/patent identified above and selected in section I(A), and to transact all business in the United States Patent and Trademark Office connected therewith:

177632

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the proceeding(s) identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Authorization for the Power of Attorney is provided by the signature on page 2 of this form.

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 15 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

II. Change of Correspondence Address

Please recognize or change the correspondence address for the above-identified reexamination or supplemental examination proceeding control number(s) (more than one may be changed **only** if they are merged proceedings) **and for the file of the above-identified patent** to be:

☒ The address associated with the above-identified Customer Number.
OR
☐ The address associated with the Customer Number identified in the box at right: ☐
OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

NOTE: THE CORRESPONDENCE ADDRESS FOR THE REEXAMINATION OR SUPPLEMENTAL EXAMINATION PROCEEDING CONTROL NUMBER(S) MUST BE THE SAME AS THAT FOR THE PATENT. SEE 37 CFR 1.33.

III. Authorization for Power of Attorney and (if selected) Change of Correspondence Address

I am the:
☐ Inventor, having ownership of the patent being reexamined.
OR
☒ Patent owner.
Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) submitted herewith or filed on _____.

Signature of Inventor or Patent Owner		Date	February 17, 2021
Name	Tatsuya Yamamoto	Telephone	
Title and Company	General Manager, Maxell, Ltd.		

NOTE: Signatures of all the inventors or patent owners of the entire interest or their representative(s) are required. If more than one signature is required, submit multiple forms, check the box below, and identify the total number of forms submitted in the blank below.

☒ A total of 2 forms are submitted. *If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	41961675
Application Number:	90014641
International Application Number:	
Confirmation Number:	3601
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	10176848
Customer Number:	24956
Filer:	Scott M Kelly/Brooklyn Grossbard
Filer Authorized By:	Scott M Kelly
Attorney Docket Number:	2638-19.06
Receipt Date:	18-FEB-2021
Filing Date:	23-DEC-2020
Time Stamp:	17:57:25
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73	90014641_-_Rule_373_Statement_-_00937900008_PTO_AIA_96_20991459.PDF	122520 17b99f80289fadf35e1918bc48eb2e530310d9cf	no	3

Warnings:

Information:					
2	Power of Attorney	Executed_-_90014641_-_POA_-_00937900008_PTO_AIA_81B_21050952.PDF	514192 1e3a7a7b9466835189889f7021ece272a8706ee0	no	3
Warnings:					
Information:					
			Total Files Size (in bytes):	636712	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Maxell, Ltd.

Application No./Patent No.: 10176848 Filed/Issue Date: January 8, 2019

Titled: RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF

Maxell, Ltd., a Corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: MARI YOSHIDA To: HITACHI, LTD.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 022596, Frame 0595, or for which a copy thereof is attached.

2. From: HITACHI, LTD. To: HITACHI CONSUMER ELECTRONICS CO., LTD.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 030622, Frame 0001, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: HITACHI CONSUMER ELECTRONICS CO., LTD. To: HITACHI MAXELL, LTD.

The document was recorded in the United States Patent and Trademark Office at
Reel 033685, Frame 0883, or for which a copy thereof is attached.

4. From: HITACHI MAXELL, LTD. To: MAXELL, LTD.

The document was recorded in the United States Patent and Trademark Office at
Reel 045142, Frame 0208, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Scott M Kelly/	February 18, 2021
Signature	Date
Scott M. Kelly	65,121
Printed or Typed Name	Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/014,641	12/23/2020	10176848	2638-19.06	3601

24956 7590 01/29/2021

MATTINGLY & MALUR, PC
1800 DIAGONAL ROAD
SUITE 210
ALEXANDRIA, VA 22314

EXAMINER	
PEIKARI, BEHZAD	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
01/29/2021	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

DO NOT USE IN PALM PRINTER

(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

ERISE IP, P.A.
7015 COLLEGE BLVD., STE 700
OVERLAND PARK, KS 66211

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/014,641* .

PATENT UNDER REEXAMINATION *10176848* .

ART UNIT *3992* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Order Granting Request For Ex Parte Reexamination	Control No. 90/014,641	Patent Under Reexamination 10176848	
	Examiner BEHZAD PEIKARI	Art Unit 3992	AIA (FITF) Status No

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The request for *ex parte* reexamination filed 12/23/2020 has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☐ PTO-892, b)☑ PTO/SB/08, c)☐ Other: ____

1. ☑ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

/B. JAMES PEIKARI/ Reexamination Specialist, AU 3992		

cc:Requester (if third party requester)

RESPONSE TO REQUEST FOR *EX PARTE* REEXAMINATION

The request filed by a third party requestor on December 23, 2020 alleges that there is a substantial new question of patentability (SNQ) affecting claims 8, 10-13, and 15-20 of U.S. Patent Number 10,176,848 (the '848 patent).

References

The alleged SNQs are based on the following references:

(1) U.S. Patent Application No. 2007/0098303 to Gallagher et al. ("Gallagher").

(2) U.S. Patent Application No. 2007/0019083 to Nakashima ("Nakashima").

Note: Nakashima was made of record during the prosecution of the '848 patent.

Brief Overview of the Patent

The '848 patent is directed to capturing photographs and generating image information on the photograph using facial recognition technology.

Briefly stated, the invention used the facial recognition to either recognize the subject of the photograph or to register the subject of the photograph for future recognition.

The '848 patent further assigns a measure of importance to the photograph. Note, e.g., Figures 5 and 6 shown below:

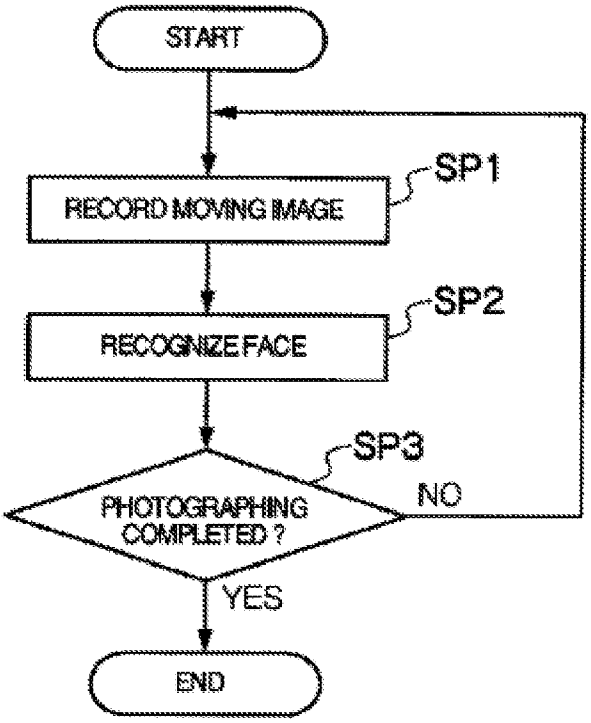


FIG. 5

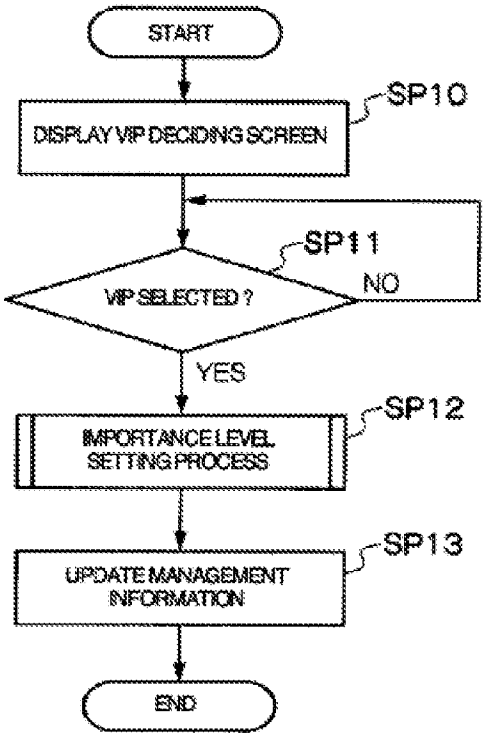


FIG. 6

Prosecution History

The '848 patent matured from U.S. Patent Application No. 14/478,020 (the '020 application), whose relevant prosecution history may be summarized as follows:

- The application was filed on September 5, 2014, with claim 1.
- In a non-final Office Action mailed February 26, 2016, claim 1 was rejected under various statutes, including a rejection which relied upon the teachings of Nakashima.

- In an amendment filed August 25, 2016, claim 1 was amended and new claims 2-10 were added.
- On December 1, 2016, a final rejection was mailed, wherein claims 1-10 were rejected under various statutes.
- On March 31, 2017, a request for continued examination (RCE) was filed, wherein claims 1-5 were amended, claims 6-10 were canceled and new claims 11-16 were added.
- On September 21, 2017, a non-final rejection was mailed, wherein claims 1-5 and 11-16 were rejected under various statutes.
- In an amendment filed March 20, 2018, claims 1, 11 and 14-16 were amended and new claims 17-25 were added.
- On July 13, 2018, a Notice of Allowance was mailed, wherein claims 1-5 and 11-25 were allowed.
- On September 18, 2018, a RCE was filed, wherein claims 21, 22 and 24 were amended.
- On November 1, 2018, a Notice of Allowance was mailed, wherein claims 1-5 and 11-25 were allowed. In the attached Reasons for Allowance, several limitations of the pending claims were noted, for example:

  "The present invention of claims 1 - 5 and 11 - 25 is directed to an image detecting apparatus including: extracting means for extracting one or more frame images from a plurality of frame images terming a moving image: display controlling means tor controlling display of the frame image extracted and a predetermined number of frame images temporally preceding and succeeding the frame image; and specifying means for selecting and specifying a desired frame image from the plurality of frame images whose display is controlled by the display controlling means."

SNQ Raised in the Request

The Requester proposed the following SNQs:

- **Issue 1:** A SNQ as to claims 8, 10-13, and 15-20 is raised by Gallagher in view of Nakashima.

Discussion of SNQ

A prior art patent or printed publication raises a substantial new question of patentability where there is:

(A) a substantial likelihood that a reasonable Examiner would consider the prior art patent or printed publication important in deciding whether or not the claim is patentable; see MPEP §2242 (I), and

(B) the same question of patentability as to the claim has not been decided in a previous or pending proceeding or in a final holding of invalidity by a federal court; see MPEP §2242 (III).

For any reexamination ordered on or after November 2, 2002, reliance on previously cited/considered art, i.e., "old art," does not necessarily preclude the existence of a substantial new question of patentability that is based exclusively on that old art. Rather, determinations on whether a substantial new question of patentability exists in such an instance shall be based upon a fact-specific inquiry done on a case-by-case basis. See MPEP 2242.

Issue 1

A SNQ as to claims 8, 10-13, and 15-20 is raised by Gallagher in view of Nakashima.

Gallagher teaches that a user can register a person of interest (e.g., a VIP) by using a labeler which allows the user to indicate "the name of a person of interest," an "identifier associated with the person of interest," and/or "the location of the person of interest within the image or video," and also allows the user to request that the system "search for images or videos from the image collection believed to contain the person of interest." When describing the VIP registration process, a user may select an image from the existing digital image collection.

Further, Nakashima teaches that registering facial images may be performed by newly "photographing the face of [a] subject" or by using a previously stored photo (e.g., stored on "HDD 75" or "an external server").

Thus, the combination of Gallagher and Nakashima discloses features which appear to be patentable features of claims 8, 10-13, and 15-20 of the '848 patent.

There is a substantial likelihood that an examiner would consider the teachings of Gallagher and Nakashima important in deciding the patentability of these claims. Gallagher was not of record in the file of the patent and is not cumulative to the art of record in the original file. The teachings of Gallagher were not subject to a final holding of invalidity by a federal court.

Nakashima was of record in the prosecution of the '848 patent, but is seen in a new light in view of the combination as a secondary reference to Gallagher.

Accordingly, it is **agreed** that the combination of Gallagher and Nakashima raises a SNQ as to claims 8, 10-13, and 15-20.

Conclusion

Claims 8, 10-13, and 15-20 are subject to reexamination.

The request did not seek reexamination of claims 1-7, 9 and 14 and did not assert the existence of a substantial new question of patentability (SNQ) for these claims (see 35 U.S.C. § 311 (b)(2); see also 37 CFR 1.915b and 1.923). These claims will not be reexamined.

Note Sony Computer Entertainment America Inc., et al. v. Jon W. Dudas, Civil Action No. 1:05CV1447 (E.D.Va. May 22, 2006), Slip Copy, 2006 WL 1472462, in which the District Court upheld the Office's discretion to not reexamine claims in a reexamination proceeding other than those claims for which reexamination had specifically been requested. The Court stated:

"To be sure, a party may seek, and the PTO may grant, ... review of each and every claim of a patent. Moreover, while the PTO in its discretion may review claims for which ... review was not requested, nothing in the statute compels it to do so. To ensure that the PTO considers a claim for ... review, § 311 (b)(2) requires that the party seeking reexamination demonstrate why the PTO should reexamine each and every claim for which it seeks review. Here, it is undisputed that Sony did not seek review of every claim under the '213 and '333 patents. Accordingly, Sony cannot now claim that the PTO wrongly failed to reexamine claims for which Sony never requested review, and its argument that AIPA compels a contrary result is unpersuasive."

Waiver of Right to File Patent Owner Statement

In a reexamination proceeding, Patent Owner may waive the right under 37 C.F.R. 1.530 to file a Patent Owner Statement. The document needs to contain a statement that Patent Owner waives the right under 37 C.F.R. 1.530 to file a Patent Owner Statement and proof of service in the manner provided by 37 C.F.R. 1.248, if the request for reexamination was made by a third party requester, see 37 C.F.R 1.550(f).

Service of Papers

After filing of a request for ex parte reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requester proceedings are merged) in the reexamination proceeding in the manner provided in 37 CFR 1.248. The document must reflect service or the document may be refused consideration by the Office. See 37 CFR 1.550(f).

Extensions of Time

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Litigation Reminder

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the patent throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

All correspondence relating to this *Ex Parte* reexamination proceeding should be directed:

By EFS: Registered users may submit via the electronic filing system EFS-web, at

https://efs.uspto.gov/efile/myportal/efs-registered

By Mail to: Mail Stop *Ex Parte* Reexam

Attn: Central Reexamination Unit
Commissioner of Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand to: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i) (C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely filed if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed:
/B. James Peikari/
Reexamination Specialist
Central Reexamination Unit 3992

Conferees:
/C.M.T/
Primary Examiner, Art Unit 3992

/ALEXANDER J KOSOWSKI/
Supervisory Patent Examiner, Art Unit 3992

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/014,641	10176848
	Examiner	Art Unit
	BEHZAD PEIKARI	3992

CPC - Searched*		
Symbol	Date	Examiner

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Review of the prosecution history of U.S. Patent No. 10,176,848	01/23/2021	BJP

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/014,641	10176848
	Certificate Date	Certificate Number

Requester Correspondence Address: ☐ Patent Owner ☑ Third Party
ERISE IP, P.A. 7015 COLLEGE BLVD., STE 700 OVERLAND PARK, KS 66211

LITIGATION REVIEW ☑	BJP (examiner initials)	23 January 2021 (date)
Case Name		Director Initials
Maxell, Ltd. v. Apple Inc. (6:20cv646, Western District, TX) (Open)		
USITC Inv. No. 337-TA-1215 (as identified by requester) (Open)		

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER

/B. JAMES PEIKARI/ Reexamination Specialist, AU 3992	

PTO/SB/08a (07-09)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Mari Yoshida
Art Unit	
Examiner Name	Peikari
Attorney Docket Number	2638-19.06

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	EX1005	US-2007/0098303	05-03-2007	Gallagher, et al.	
	EX1011	US-2005/0063566	03-24-2005	Beck, et al.	
	EX1006	US-2007/0019083	01-25-2007	Nakashima	
		US-			
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		US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] -Number[4] -Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature	/B. JAMES PEIKARI/	Date Considered	01/23/2021

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /BJP/

PTO/SB/08b (07-09)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 2

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Mari Yoshida
Art Unit	
Examiner Name	Peikari
Attorney Docket Number	2638-19.06

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	EX1002	'848 Patent File History	
	EX1004	'368 Patent File History	
	EX1007	Apple Complaint	
	EX1008	ITC Complaint	
	EX1012	Olympus E-510 User Manual	
	EX1013	Samsung Plasma Display Manual	

Examiner Signature	/B. JAMES PEIKARI/	Date Considered	01/23/2021

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /B.P./

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/014,641	12/23/2020	10176848	2638-19.06	3601

24956 7590 01/06/2021

MATTINGLY & MALUR, PC
1800 DIAGONAL ROAD
SUITE 210
ALEXANDRIA, VA 22314

EXAMINER	
PEIKARI, BEHZAD	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
01/06/2021	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

ERISE IP, P.A.
7015 COLLEGE BLVD.,
SUITE 700
OVERLAND PARK, KS 66211

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/014,641* .

PATENT UNDER REEXAMINATION *10176848* .

ART UNIT *3992* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Ex Parte Reexamination Interview Summary – Pilot Program for Waiver of Patent Owner's Statement	Control No. 90/014,641	Patent Under Reexamination is Requested 10176848	
	Examiner BEHZAD PEIKARI	Art Unit 3992	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

All participants (USPTO official and patent owner):

(1) SHANETTE BROWN (3) _____

(2) _____ (4) _____

Date of Telephonic Interview: 04 January 2021.

A. The USPTO official requested waiver of the patent owner's statement pursuant to the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The patent owner **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

☐ The patent owner **did not agree** to waive its right to file a patent owner's statement under 35 U.S.C. 304 at this time.

☑ USPTO personnel were unable to reach the patent owner.**

B. The Patent Owner of record telephoned the Office and indicated they would like to participate in the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The Patent owner of record telephoned the Office and **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

The patent owner is not required to file a written statement of this telephone communication under 37 CFR 1.560(b) or otherwise. However, any disagreement as to this interview summary must be brought to the immediate attention of the USPTO, and no later than one month from the mailing date of this interview summary. Extensions of time are governed by 37 CFR 1.550(c).

*For more information regarding this pilot program, see *Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings, 75 Fed. Reg.* 47269 (August 5, 2010), available on the USPTO Web site at http://www.uspto.gov/patents/law/notices/2010.jsp.

**The patent owner may contact the USPTO personnel at (571) 272-7705 or at the telephone number provided below if the patent owner decides to waive the right to file a patent owner's statement under 35 U.S.C. 304.

/SHANETTE BROWN/ (571)272-6632
Signature and telephone number of the USPTO official, who contacted, was contacted by, or attempted to contact the patent owner.

cc: Requester (if third party requester)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/014,641	12/23/2020	10176848

CONFIRMATION NO. 3601

ERISE IP P.A. (GENERAL)
7015 COLLEGE BLVD.,
STE 700
OVERLAND PARK, KS 66211

REEXAMINATION REQUEST NOTICE

OC000000122302154

Date Mailed: 12/29/2020

NOTICE OF REEXAMINATION REQUEST FILING DATE

(Third Party Requester)

Requester is hereby notified that the filing date of the request for reexamination is 12/23/2020, the date that the filing requirements of 37 CFR § 1.510 were received.

A decision on the request for reexamination will be mailed within three months from the filing date of the request for reexamination. (See 37 CFR 1.515(a)).

A copy of the Notice is being sent to the person identified by the requester as the patent owner. Further patent owner correspondence will be the latest attorney or agent of record in the patent file. (See 37 CFR 1.33). Any paper filed should include a reference to the present request for reexamination (by Reexamination Control Number).

cc: Patent Owner
24956
MATTINGLY & MALUR, PC
1800 DIAGONAL ROAD
SUITE 210
ALEXANDRIA, VA 22314

/pflewis/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

UNITED STATES PATENT AND TRADEMARK OFFICE

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REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/014,641	12/23/2020	10176848

CONFIRMATION NO. 3601

REEXAM ASSIGNMENT NOTICE

24956
MATTINGLY & MALUR, PC
1800 DIAGONAL ROAD
SUITE 210
ALEXANDRIA, VA 22314

OC000000122302156

Date Mailed: 12/29/2020

NOTICE OF ASSIGNMENT OF REEXAMINATION REQUEST

The above-identified request for reexamination has been assigned to Art Unit 3992. All future correspondence to the proceeding should be identified by the control number listed above and directed to the assigned Art Unit.

A copy of this Notice is being sent to the latest attorney or agent of record in the patent file or to all owners of record. (See 37 CFR 1.33(c)). If the addressee is not, or does not represent, the current owner, he or she is required to forward all communications regarding this proceeding to the current owner(s). An attorney or agent receiving this communication who does not represent the current owner(s) may wish to seek to withdraw pursuant to 37 CFR 1.36 in order to avoid receiving future communications. If the address of the current owner(s) is unknown, this communication should be returned within the request to withdraw pursuant to Section 1.36.

NOTICE OF USPTO EX PARTE REEXAMINATION PATENT OWNER STATEMENT WAIVER PROGRAM

The USPTO has implemented a pilot program where, after a reexamination proceeding has been granted a filing date and before the examiner begins his or her review, the patent owner may orally waive the right to file a patent owner's statement. See *"Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings,"* 75 FR 47269 (August 5, 2010). One goal of the pilot program is to reduce the pendency of reexamination proceedings and improve the efficiency of the reexamination process.

Ordinarily when ex parte reexamination is ordered, the USPTO must wait until after the receipt of the patent owner's statement and the third party requester's reply, or after the expiration of the time period for filing the statement and reply (a period that can be as long as 5 to 6 months), before mailing a first determination of patentability. The USPTO's first determination of patentability is usually a first Office action on the merits or a Notice of Intent to Issue Reexamination Certificate (NIRC).

Under the pilot program, the patent owner's oral waiver allows the USPTO to act on the first determination of patentability immediately after determining that reexamination will be ordered, and in a suitable case issue the reexamination order and the first determination of patentability (which could be a NIRC if the claims under reexamination are confirmed) at the same time.

Benefits to the Patent Owner for participating in this pilot program include reduction in pendency.

To participate in this pilot program, Patent Owners may contact the USPTO's Central Reexamination Unit (CRU) at 571-272-7705. The USPTO will make the oral waiver of record in the reexamination file in an interview summary and a copy will be mailed to the patent owner and any third party requester.

cc: Third Party Requester(if any)
ERISE IP P.A. (GENERAL)
7015 COLLEGE BLVD.,
STE 700
OVERLAND PARK, KS 66211

/pflewis/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

Samsung - Exhibit 1004 - Page 324

Patent Assignment Abstract of Title

Total Assignments: 1

Application #: 14478020 **Filing Dt:** 09/05/2014 **Patent #:** 10176848 **Issue Dt:** 01/08/2019
PCT #: NONE **Intl Reg #:** **Publication #:** US20140376879 **Pub Dt:** 12/25/2014
Inventor: Mari YOSHIDA
Title: RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF

Assignment: 1

Reel/Frame: 045142 / 0208 **Received:** 01/25/2018 **Recorded:** 01/25/2018 **Mailed:** 03/09/2018 **Pages:** 141
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: HITACHI MAXELL, LTD. **Exec Dt:** 10/01/2017
Assignee: MAXELL, LTD.
1 KOIZUMI, OYAMAZAKI, OYAMAZAKI-CHO, OTOKUNI-GUN
KYOTO, JAPAN
Correspondent: NADEEN NSOULI
71 SOUTH WACKER DRIVE
CHICAGO, IL 60606

Search Results as of: 12/28/2020 05:14 PM

If you have any comments or questions concerning the data displayed, contact PRD / Assignments at 571-272-3350. v.2.6
Web interface last modified: Jun 26, 2017 v.2.6

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 3601

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
90/014,641	12/23/2020	386	3992	2638-19.06

APPLICANTS

INVENTORS

10176848, Residence Not Provided;
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APPLE INC (3RD. PTY. REQ.), CUPERTINO, CA;
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**** CONTINUING DATA ***************************

This application is a REX of 14/478,020 09/05/2014 PAT 10176848 *
which is a CON of 12/430,185 04/27/2009 PAT 9159368
(*)Data provided by applicant is not consistent with PTO records.

**** FOREIGN APPLICATIONS ***************************

JAPAN 14/478,020 05/19/2008

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

Foreign Priority claimed ❑ Yes ❑ No 35 USC 119(a-d) conditions met ❑ Yes ❑ No Verified and Acknowledged _____ Examiner's Signature	❑ Met after Allowance _____ Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
				20	4

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UNITED STATES

TITLE

RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF

FILING FEE RECEIVED		
12600	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	❑ All Fees ❑ 1.16 Fees (Filing) ❑ 1.17 Fees (Processing Ext. of time) ❑ 1.18 Fees (Issue) ❑ Other _____ ❑ Credit

BIB (Rev. 05/07).

Litigation Search Report CRU 3999

Reexamination Control No. 90/014,641

To: EXAMINER	**From: Shanette Brown**
Location: CRU	**Location: CRU 3999 / REM 4C75**
Art Unit: 3999	**Phone: (571) 272-6632**
Date: 12/24/20	**E-mail: Shanett.brown@uspto.gov**

Search Notes

U.S. Patent No. 10,176,848

1. Performed a KeyCite Search in Westlaw, which retrieves all history on the patent including any litigation.
2. Performed a search on the patent in Lexis CourtLink for any open dockets or closed cases.
3. Performed a search in Lexis in the Federal Courts and Administrative Materials databases for any cases found.
4. Performed a search in Lexis in the IP Journal and Periodicals database for any articles on the patent.
5. Performed a search in Lexis in the news databases for any articles about the patent or any articles about litigation on this patent.

Litigation: Found

Status	Docket	Description
OPEN	6:20cv646,	Maxell, Ltd. V. Apple Inc.

Citing References (9)

Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	**1. Complaint and Demand for Jury Trial** MAXELL, LTD., Plaintiff, v. APPLE INC., Defendant. 2020 WL 4036869, *1+ , W.D.Tex. (Trial Pleading) , (NO. 6:20-CV-00646) ... by Apple's infringement of the '590 Patent COUNT 5 - INFRINGEMENT OF U.S. PATENT NO. 10,176,848 66. Maxell incorporates paragraphs 1-65 above by reference.67. U.S. Patent No. 10,176,848 (the '" 848 Patent ," attached hereto at Exhibit 5) duly issued on January 8, 2019 and is entitled Recording and Reproducing Apparatus and ...	July 16, 2020	Petition		—
Cited by	**2. Commission Notice** IN THE MATTER OF CERTAIN MOBILE ELECTRONIC DEVICES AND LAPTOP COMPUTERS NOTICE OF INSTITUTION OF INVESTIGATION USITC Inv. No. 337-TA-1215, 337-TA-1215+ , U.S.Intern.Trade Com'n , (NO. 337-TA-1215) Institution of Investigation Pursuant to 19 U.S.C. 1337 AGENCY: U.S. International Trade Commission ACTION: Notice SUMMARY: Notice is hereby given that a complaint was filed with... ... the '517 patent")U.S. Patent No. 8,982,086 ("the '086 patent")U.S. Patent No. 7,199,821 ("the '821 patent")U.S. Patent No. 10,129,590 ("the '590 patent"); and U.S. Patent No. 10,176,848 ("the '848 patent ") The complaint further alleges that an industry in the United States exists as required by the applicable Federal Statute ...	Aug. 19, 2020	Administrative Decision		—
Mentioned by	**3. Mobile communication terminal device** LitAlert P2020-29-112 ... Subsequent Action: 07/16/2020 Action Taken: CAUSE - 35 USC 271 - COMPLAINT FOR PATENT INFRINGEMENT Notes: none Other Patents: US 8982086 US 7199821 US 10129590 US 10176848 Other Trademarks: none See LitAlert No: none ...	July 16, 2020	Lit Alert		—
—	**4. APPARATUS FOR RECORDING AND REPRODUCING, HAS CONTROL UNIT THAT CONTROLS REPRODUCING UNIT TO SELECTIVELY REPRODUCE RECORDED IMAGE DATA WHICH INCLUDE SPECIFIC PERSON BASED UPON IMPORTANCE LEVEL WHICH SET BY IMPORTANCE LEVEL SETTING UNIT** Out Of Plan DWPI 2014-W86957 ... include said specific person based upon an importance level which set by said importance level setting unit.First Derwent Appearance:2015.03 Publication No. (Derwent): US 10176848 B2 Original Title (English):RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF Publication Date:2019-01-08 Application No.:US 478020 Application Date:2014-09 ...	May 19, 2008	DWPI	—	—

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Treatment	Title	Date	Type	Depth	Headnote(s)
—	**5. METHOD FOR RECORDING AND REPRODUCING INFORMATION IN VIDEO CAMERA, INVOLVES CONTROLLING REPRODUCING UNIT BY CONTROL UNIT TO REPRODUCE VIDEO INFORMATION FROM RECORDING MEDIUM ACCORDING TO RESULT OF FACE-RECOGNITION PROCESSING UNIT** Out Of Pass DWPI 2019-345287+ ... 2008-05-19 Application priority Earliest Priority Date:2008-05-19 Related:Continuation of US patent number US 9159368 B Continuation of US patent number US 10176848 B Previously issued patent number US 2019115050 A Continuation of US patent number US 10176848 B Continuation of US patent number US 9159368 B ...	May 19, 2008	DWPI	—	—
—	**6. PatStat 10176848** ... Patent Status File Patent Number: US 10176848 Change Code: COR Description: Certificate of Correction Reissue Number:OG Date: 07/30/2019 ...	July 30, 2019	Patent Status Files	—	—
—	**7. Maxell, Ltd. v. Apple Inc.**	July 16, 2020	Docket Summaries	—	—
—	**8. RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF** Out Of Pass US PAT 10418069 , U.S. PTO Utility In a recording and reproducing apparatus and a recording and reproducing method for the recording and reproducing apparatus for recording and reproducing image information on a... ... Chevalier, Robert Robert Chevalier 2484 Priority Information Related Information:This application is a Continuation of Application No. 14/478,020, filed on 2014/09/05, now Patent No. 10,176,848 US US which is a Continuation of Application No. 12/430,185, filed on 2009/04/27, now Patent No. 9,159,368, issued on 2009 ...	Sep. 17, 2019	Patents	—	—
—	**9. RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF** Out Of Pass US PAT APP 20190115050 , U.S. PTO Application In a recording and reproducing apparatus and a recording and reproducing method for the recording and reproducing apparatus for recording and reproducing image information on a... ... YOSHIDA Yokohama, Japan Yokohama Japan Priority Information Related Information:This application is a Continuation of Application No. 14/478,020, filed on 2014/09/05, now Patent No. 10,176,848 US US which is a Continuation of Application No. 12/430,185, filed on 2009/04/27, now Patent No. 9,159,368 US US Priority ...	Apr. 18, 2019	Patents	—	—

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CourtLink US PAT 10176848 Dockets Client: -None- History Help More

Document: 6:20cv646, Maxell, Ltd. V. Apple Inc. Actions

Go to 1 of 1 Results list

6:20cv646, Maxell, Ltd. V. Apple Inc.

US District Court Docket

US District Court for the Western District of Texas

(Waco)

This case was retrieved on 12/24/2020

Header

Case Number: 6:20cv646
Date Filed: 07/16/2020
Assigned To: Judge Alan D Albright
Nature of Suit: Patent (830)
Cause: Patent Infringement
Lead Docket: None
Other Docket: None
Jurisdiction: Federal Question

Class Code: Open
Statute: 35:271
Jury Demand: Plaintiff
Demand Amount: $0
NOS Description: Patent

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Proceedings

Retrieve Document(s)

Samsung - Exhibit 1004 - Page 330

	Availability	#	Date	Proceeding Text	Source
☐	Free	6	03/24/2020	STANDING ORDER from U.S. District Judge Alan D. Albright regarding scheduled civil hearings. Signed by Judge Alan D Albright. (Attachments: # 1 Supplemental Standing Order from Chief Judge Garcia re OCvil19 Court Procedures)(mc5) (Entered: 07/22/2020)	
☐	Free	1	07/16/2020	COMPLAINT for Patent Infringement (Filing fee $ 400 receipt number 0542-13768209), filed by Maxell, Ltd.. (Attachments: # 1 Exhibit 1, # 2 Exhibit 2, # 3 Exhibit 3, # 4 Exhibit 4, # 5 Exhibit 5, # 6 Exhibit 6, # 7 Exhibit 7, # 8 Exhibit 8, # 9 Exhibit 9, # 10 Exhibit 10, # 11 Civil Cover Sheet)(Harrell, Robert) (Entered: 07/16/2020)	
☐	Online	2	07/16/2020	REQUEST FOR ISSUANCE OF SUMMONS by Maxell, Ltd.. (Harrell, Robert) (Entered: 07/16/2020)	
☐	Online	3	07/16/2020	Notice of Filing of Patent/Trademark Form (AO 120). AO 120 forwarded to the Director of the U.S. Patent and Trademark Office. (Harrell, Robert) (Entered: 07/16/2020)	
☐	Free	4	07/16/2020	RULE 7 DISCLOSURE STATEMENT filed by Maxell, Ltd.. (Harrell, Robert) (Entered: 07/16/2020)	
☐	Runner		07/16/2020	Case assigned to Judge Alan D Albright. CM WILL NOW REFLECT THE JUDGE INITIALS AS PART OF THE CASE NUMBER. PLEASE APPEND THESE JUDGE INITIALS TO THE CASE NUMBER ON EACH DOCUMENT THAT YOU FILE IN THIS CASE. (lad) (Entered: 07/16/2020)	
☐	Online	5	07/16/2020	Summons Issued as to Apple Inc. (lad) (Entered: 07/16/2020)	
☐	Free	7	07/29/2020	SUMMONS Returned Executed by Maxell, Ltd.. Apple Inc. served on 7/21/2020, answer due 8/11/2020. (Harrell, Robert) (Entered: 07/29/2020)	
☐	Free	8	08/10/2020	Unopposed MOTION for Extension of Time to File Answer by Apple Inc.. (Attachments: # 1 Proposed Order)(Guaragna, John) (Entered: 08/10/2020)	
☐	Runner		08/11/2020	Text Order GRANTING 8 Motion for Extension of Time to Answer entered by Judge Alan D Albright. Came on for consideration is Defendant's Motion. Noting that it is unopposed, the Court GRANTS the Motion. Defendant shall have up to and including September 10, 2020 to answer or otherwise respond to Plaintiff's Complaint. (This is a text-only entry generated by the court. There is no document associated with this entry.) (jy) (Entered: 08/11/2020)	
☐	Runner		08/11/2020	Reset Deadlines. Apple Inc. answer due 9/10/2020. (lad) (Entered: 08/11/2020)	
☐	Online	9	09/08/2020	Unopposed MOTION for Extension of Time to File Answer re 1 Complaint, or Otherwise Respond by Apple Inc.. (Attachments: # 1 Proposed Order)(Guaragna, John) (Entered: 09/08/2020)	
☐	Runner		09/08/2020	Text Order GRANTING 9 Unopposed Motion for Extension of Time to Answer entered by Judge Alan D Albright. Defendant has until up to and including September 24, 2020 to answer or otherwise respond to Plaintiff's complaint. (This is a text-only entry generated by the court. There is no document associated with this entry.) (as) (Entered: 09/08/2020)	
☐	Runner		09/08/2020	Reset Deadlines. Apple Inc. answer due 9/24/2020. (lad) (Entered: 09/09/2020)	
☐	Free	10	09/17/2020	MOTION to Stay Case Pursuant to 28 U.S.C. Sec. 1659 Pending Parallel ITC Action by Apple Inc.. (Attachments: # 1 Proposed Order)(Guaragna, John) (Entered: 09/17/2020)	
☐	Free	11	09/22/2020	RESPONSE to Motion, filed by Maxell, Ltd., re 10 MOTION to Stay Case Pursuant to 28 U.S.C. Sec. 1659 Pending Parallel ITC Action filed by Defendant Apple Inc. Maxell's Non-Opposition to Apple's Motion to Stay (Attachments: # 1 Proposed Order to Response-Non-Opposition to Apple's Motion to Stay)(Harrell, Robert) (Entered: 09/22/2020)	

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	Availability	#	Date	Proceeding Text	Source
☐	Online	14	09/22/2020	Standing Order Regarding Notice of Readiness in Patent Cases (Entered: 10/05/2020)	
☐	Online	12	09/24/2020	Unopposed MOTION for Extension of Time to File Answer re 1 Complaint, or Otherwise Respond by Apple Inc.. (Attachments: # 1 Proposed Order)(Guaragna, John) (Entered: 09/24/2020)	
☐	Runner		09/24/2020	Text Order GRANTING 12 Motion for Extension of Time to Answer entered by Judge Alan D Albright. Before the Court is Apple's Unopposed Motion to Extend Time to Answer, Move, or Otherwise Respond to Plaintiffs Complaint. The Court GRANTS the motion. It is therefore ORDERED that Apple's deadline to answer, move, or otherwise respond to Maxells Complaint (Dkt. 1) is extended until October 26, 2020. (This is a text-only entry generated by the court. There is no document associated with this entry.) (jy) (Entered: 09/24/2020)	
☐	Runner		09/24/2020	Reset Deadlines: Apple Inc. answer due 10/26/2020. (lad) (Entered: 09/25/2020)	
☐	Free	13	09/28/2020	REPLY to Response to Motion, filed by Apple Inc., re 10 MOTION to Stay Case Pursuant to 28 U.S.C. Sec. 1659 Pending Parallel ITC Action filed by Defendant Apple Inc. (Attachments: # 1 Exhibit A)(Guaragna, John) (Entered: 09/28/2020)	
☐	Online	15	10/26/2020	Unopposed MOTION for Extension of Time to File Answer re 1 Complaint, or Otherwise Respond by Apple Inc.. (Attachments: # 1 Proposed Order)(Guaragna, John) (Entered: 10/26/2020)	
☐	Runner		10/29/2020	Text Order GRANTING 15 Motion for Extension of Time to Answer entered by Judge Alan D Albright. This Court, having considered Defendant Apple Inc.s Unopposed Motion for Extensionof Time to Answer or Otherwise Respond, hereby GRANTS the Motion and ORDERS the following: Apples deadline to answer, move, or otherwise respond to Maxells Complaint (Dkt. 1) is extended until a decision has been made on Apples Motion to Stay Pursuant to 28 U.S.C. § 1659 Pending Parallel ITC Action (Dkt. 10).(This is a text-only entry generated by the court. There is no document associated with this entry.) (re) (Entered: 10/29/2020)	

Retrieve Document(s)

Patents

Number	Title	Issued	Class	Subclass
7,203,517	Mobile communication terminal device	04/10/2007	455	557
8,982,086	Information processing apparatus	03/17/2015	345	173
7,199,821	Imaging apparatus and method for controlling white balance	04/03/2007	348	223.1
10,129,530	Display apparatus and video processing apparatus	11/13/2018	1	1
10,176,848	Recording and reproducing apparatus and method thereof	01/08/2019	1	1

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US10418069B2 - Recording and reproducing apparatus and method thereof

Original

Bibliographic information & Images

Bibliographic information

Publication number and date
US10418069B2
2019-09-17

Granted

Application number and date
US16218644 (/api/control?query=AN:("US16218644")&autosearch=true)
2018-12-13

Priority number and date
JP2008130678 (/api/control?query=PRN:("JP2008130678")&autosearch=true)
2008-05-19

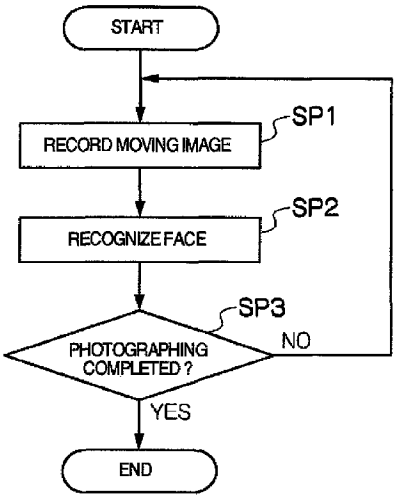
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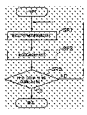
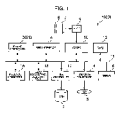
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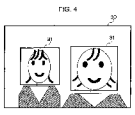
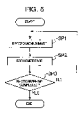
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1/13 Clipped image




Abstract

In a recording and reproducing apparatus and a recording and reproducing method for the recording and reproducing apparatus for recording and reproducing image information on a scene obtained through photographing, relative to a predetermined first recording medium and being capable of setting one or more chapters to each scene, a face recognizing process is executed for a photographed image based on the image information, an importance level of each chapter is set in accordance with a result of the face recognizing process for a very important person (VIP) set by a user, and each chapter having a relevant importance level among importance levels of respective chapters is selectively reproduced. A user can therefore find an object chapter and scene quickly and easily.

Claims

1. A recording and reproducing method for recording and reproducing video information, comprising: photographing, by a photographing unit, an object and generating video information; recording, by a recording unit, the video information having been generated by the photographing unit into a recording medium; executing, by a face-recognition processing unit, a face-recognizing process on the video information to recognize a face; reproducing, by a reproducing unit, the video information having been recorded by the recording unit from the recording medium; setting, by a specific person setting unit, one of a first setting mode and a second setting mode and executing a process of specifying a person with a face according to the set one of the first setting mode and the second setting mode, wherein, when the first setting mode is set, a person is specified with a face recognized by the face-recognition processing unit after the first setting mode is set and before the recording of the video information by the recording unit, and, when the second setting mode is set, a person is specified with a face in the video information in the recording medium that has previously been recorded and previously recognized by the face-recognition processing unit before the specific person setting unit sets the first setting mode or the second setting mode; and controlling, by a control unit, the reproducing unit so as to selectively reproduce the video information from the recording medium which includes the specific person set by the specific person setting unit according to a result of the face-recognition processing unit.

2. The recording and reproducing method according to claim 1 , further comprising: selecting, by a user of a user interface unit, one of operation modes including: (1) a specific person setting mode having the first setting mode and the second setting mode, (2) a recording mode in which the video information generated by the photographing unit are recorded in the recording medium, and (3) a reproducing mode in which the video information is to be reproduced by the reproducing unit, wherein the control unit controls the recording and reproducing apparatus according to the mode selected by the user interface unit.

3. The recording and reproducing method according to claim 2 , wherein the specific person setting mode is configured to specify one or more persons, and the control unit is configured to control the reproducing unit so as to reproduce the video information of the specified one or more persons.

4. The recording and reproducing method according to claim 2 , further comprising: displaying, by a display unit, information of a face to which the face-recognizing processing has been conducted, in case that the recording mode is selected by the user interface.

5. The recording and reproducing method according to claim 2 , wherein the reproducing mode selected by the user interface is for reproducing the video information of the specific person specified by the specific person setting unit by which one of a plurality of reproducing modes can be selected, each of the reproducing modes having a respective number of the video information of the specific person, and wherein the control unit controls the reproducing unit so as to reproduce the video information of the specific person according to the selected one of the reproducing modes.

6. A recording and reproducing method for recording and reproducing image information, comprising: capturing a photograph and generating image information of the photograph; recording the image information in a recording medium; executing a face-recognizing process on the image information to recognize a face; reproducing the recorded image information from the recording medium; registering a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person; and selectively reproducing the recorded image information which includes the registered specific person.

7. The recording and reproducing method according to claim 6 , wherein the image information to be selectively reproduced is the image information which is recognized as including the specific person before the recording of the image information.

8. The recording and reproducing method according to claim 6 , wherein the image information to be selectively reproduced is the image information having a relatively high importance level selected among the image information recorded in the recording medium which includes the registered specific person.

9. A recording and reproducing method for recording and reproducing image information, comprising: photographing an object and generating image information, by a photographing sensor; recording, by a recorder, the image information generated by the photographing sensor in a recording medium; reproducing, by a reproducer, the image information recorded by the recorder; executing, by processing circuitry, a face-recognizing process on the image information generated by the photographing sensor to recognize a face; registering, by the processing circuitry, a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person; firstly, selecting, by the processing circuitry, image information which includes the registered specific person; secondly, selecting, by the processing circuitry, the image information based on a predetermined condition from among the selected image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user; and controlling the reproducer, by the processing circuitry, to selectively and sequentially reproduce the image information selected based on the predetermined condition.

10. The recording and reproducing method according to claim 9 , wherein the image information to be selectively and sequentially reproduced is the image information which is recognized as including the specific person before the recording of the image information by the recorder.

11. The recording and reproducing method according to claim 9 , further comprising controlling the reproducer, by the processing circuitry, to selectively and sequentially reproduce the image information having the predetermined condition including a relatively high importance level selected from among the image information recorded in the recording medium which includes the registered specific person.

12. A recording and reproducing method for recording and reproducing image information, comprising: photographing, by a photographing sensor, an object and generating image information; recording, by a recorder, the image information generated by the photographing sensor in a recording medium; reproducing, by a reproducer, the image information recorded by the recorder; executing, by processing circuitry, a face-recognizing process on the image information generated by the photographing sensor to recognize a face; registering, by processing circuitry, a person in the image information as a specific person, wherein a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person; firstly, selecting, by processing circuitry, image information which includes the registered specific person, secondly, selecting, by processing circuitry, the image information based on a predetermined condition from among the selected image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and controlling, by processing circuitry, the reproducer to selectively and sequentially reproduce the image information selected based on the predetermined condition.

13. The recording and reproducing method according to claim 1 , wherein the controlling unit further controls the reproducing unit to reproduce the video information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and wherein a reproducing time required for reproducing the video information under the first reproducing mode is shorter than a reproducing time required for reproducing the video information under the second reproducing mode, and the video information reproduced under the second reproducing mode includes the video information reproduced under the first reproducing mode in addition to other of the video information not reproduced under the first reproducing mode.

14. The recording and reproducing method according to claim 13 , wherein the controlling unit further controls the reproducing unit to reproduce the video information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and wherein a reproducing time required for reproducing the video information under the third reproducing mode is longer than the reproducing time required for reproducing the video information under the second reproducing mode.

15. The recording and reproducing method according to claim 6 , further comprising: controlling the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second reproducing mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

16. The recording and reproducing method according to claim 15 , further comprising: controlling the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

17. The recording and reproducing method according to claim 9 , further comprising: controlling the reproducer to selectively and sequentially reproduce the image information selected based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second reproducing mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

18. The recording and reproducing method according to claim 17 , further comprising: controlling the reproducer to selectively and sequentially reproduce the image information selected based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

19. The recording and reproducing method according to claim 12 , further comprising: controlling the reproducer to selectively and sequentially reproduce the image information selected based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second reproducing mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

20. The recording and reproducing method according to claim 19 , further comprising: controlling the reproducer to selectively and sequentially reproduce the image information selected based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

Original

Families

INPADOC

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Extended (15)	Complete (15)	Main (15)	Domestic (2)	Application number	Publication	Title		Status
2008-05-19 Priority claims CN200910118367 JP2008130678 US12430185 US14478020	2008-05-19 Priority claims CN200910118367 JP2008130678 US12430185 US14478020	2008-05-19 Priority claims CN200910118367 JP2008130678 US12430185 US14478020	2008-05-19	16218644 US16218644	US10418069B2	Recording and reproducing apparatus and method thereof	PDF	Granted
				16218644 US16218644	US20190115050A1	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF	PDF	Granted
			2008-05-19	15898351 US15898351	US20180174621A1	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF	PDF	Filed

			2008-05-19	200910118367 CN200910118367	CN101588450B	Recording and reproducing apparatus and method thereof		Granted
				200910118367 CN200910118367	CN101588450A	Recording and reproducing apparatus and method thereof		Granted
			2008-05-19	12430185 US12430185	US9159368B2	Recording and reproducing apparatus and method thereof		Granted
				12430185 US12430185	US20090285546A1	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		Granted
			2008-05-19	201310293822 CN201310293822	CN103475837B	Recording and reproducing device and method		Granted
				201310293822 CN201310293822	CN103475837A	Recording and reproducing apparatus and method		Granted
			2008-05-19	201310294338 CN201310294338	CN103402070B	Recording and reproducing device and method		Granted
				201310294338 CN201310294338	CN103402070A	Recording and reproducing apparatus and method thereof		Granted
			2008-05-19	14478020 US14478020	US10176848B2	Recording and reproducing apparatus and method thereof		Granted
				14478020 US14478020	US20140376879A1	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		Granted
			2008-05-19	2008130678 JP2008130678	JP4960301B2	Recording and reproducing device and method		Granted
				2008130678 JP2008130678	JP2009278592A	RECORDING AND REPRODUCING DEVICE AND METHOD		Granted

Description

INCORPORATION BY REFERENCE

[0001] This application is a continuation of application Ser. No. 14/478,020, filed Sep. 5, 2014, which is a continuation of application Ser. No. 12/430,185, filed on Apr. 27, 2009, now U.S. Pat. No. 9,159,368, which claims the benefit of Japanese Application No. JP 2008-130678 filed on May 19, 2008, in the Japanese Patent Office, the disclosures of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] The present invention related to a recording and reproducing apparatus and a recording and reproducing method, suitable for application to, e.g., a video camera.

[0003] In recent years, recording and reproducing apparatus are a widespread use which apparatus are compatible with randomly accessible recording media such as a digital versatile disc (DVD), a semiconductor memory and a hard disc drive (HDD). Such recording and reproducing apparatus can easily and quickly cue a photographed image recorded in a recording medium.

[0004] Of recording and reproducing apparatus of this type, for example, a general video camera manages generally video information of photographed images in the unit of scene, and cues each scene by using management information on each scene. A video camera of this type can set a plurality of chapters in one scene, and can cue each chapter.

[0005] A scene means a series of images recorded during a period from when a user depresses a record button to start photographing to when the user depresses again the record button to stop photographing. The number of scenes increases each time photographing is made upon depression of the record button. The chapter means a delimiter of images in one scene.

[0006] A user of a video camera can know quickly the contents of each scene by reproducing image information recorded in the recording medium by sequentially cuing each chapter.

[0007] However, if the number of chapters set in a scene is large, a user of the video camera is required to repeat a cue operation as many times as the number of chapters set in the scene, in order to confirm the contents to the last scene. There arises therefore a problem of much work and long time.

[0008] JP-A-06-165009 discloses techniques of efficiently knowing the contents of a scene by calculating a priority order of each frame from the type of button manipulation during photographing, and reproducing a frame having a higher priority order.

SUMMARY OF THE INVENTION

[0009] The capacity of a recording medium of a recent video camera is becoming large so that a scene photographed in a long time duration can be stored in the recording medium or scenes photographed a plurality of times can be stored in the recording medium. It is therefore difficult for a user to quickly find a target scene from a number of scenes recorded in the recording medium.

[0010] Some conventional recording and reproducing apparatus are equipped with a function of displaying a list of thumbnail images of scenes. However, this function displays only one thumbnail image per one scene so that a user feels difficult in some cases to know the whole contents of a scene photographed in a long time duration from one thumbnail image. Further, after a lapse of long time after photographing, it is difficult for a user to remember the whole contents of a scene from one corresponding thumbnail image.

[0011] If a user cannot remember the contents of a scene even if the thumbnail image is viewed, the user confirms the contents of the scene by reproducing the scene. If the contents of a long time scene is to be confirmed, it becomes necessary to provide a function of confirming quickly the whole contents of the scene by cuing each chapter. However, this function has not been proposed yet.

[0012] JP-A-06-165009 discloses techniques of calculating a priority order of each frame from the type of button manipulation during photographing, and when digest reproduction for knowing the contents of a scene is to be performed, reproducing a frame having a higher priority order. According to the techniques, however, a priority degree cannot be set to a scene photographed without button manipulation by a user. It cannot be said that the techniques are easy to use.

[0013] The present invention has been made in consideration of the above-described issues, and provides a recording and reproducing apparatus and a recording and reproducing method allowing a user to rapidly and easily find a target chapter or scene.

[0014] In order to settle these issues, the present invention provides a recording and reproducing apparatus capable of setting one or more chapters to each scene, comprising: a recording and reproducing unit for recording and reproducing image information on the scene obtained through photographing, relative to a predetermined first recording medium; a face recognizing execution unit for executing a face recognizing process for a photographed image based on the image information; an importance level setting unit for setting an importance level of each chapter in accordance with a result of the face recognizing process for a very important person (VIP) set by a user; and a control unit for controlling the recording and reproducing unit so as to selectively reproduce each chapter having a relevant importance level, among importance levels of respective chapters.

[0015] Accordingly, the recording and reproducing apparatus of the present invention can selectively reproduce a particular chapter in accordance with user settings, such as a chapter on which a VIP appears frequently.

[0016] The present invention provides further a recording and reproducing method for a recording and reproducing apparatus for recording and reproducing image information on a scene obtained through photographing, relative to a predetermined first recording medium and being capable of setting one or more chapters to each scene, the method comprising: a first step of executing a face recognizing process for a photographed image based on the image information; a second step of setting an importance level of each chapter in accordance with a result of the face recognizing process for a VIP set by a user; and a third step of selectively reproducing each chapter having a relevant importance level, among importance levels of respective chapters.

[0017] Accordingly, the recording and reproducing method of the present invention can selectively reproduce a particular chapter in accordance with user settings, such as a chapter on which a VIP appears frequently.

[0018] According to the present invention, a user can therefore find an object chapter and scene quickly and easily.

[0019] Other objects, features and advantages of the invention will become apparent from the following description of the embodiments of the invention taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] FIG. 1 is a block diagram illustrating the structure of a video camera according to first and second embodiments.

[0021] FIG. 2 is a conceptual diagram illustrating an example of chapter management information.

[0022] FIG. 3 is a conceptual diagram illustrating an example of face recognizing management information.

[0023] FIG. 4 is a conceptual diagram illustrating an example of a photographed image when face recognizing is made valid.

[0024] FIG. 5 is a flow chart illustrating the sequence of a photographed image recording process.

[0025] FIG. 6 is a flow chart illustrating the sequence of a chapter importance level setting process.

[0026] FIG. 7 is a brief diagrammatic view illustrating an example of the layout of a VIP determining screen.

[0027] FIG. 8 is a flow chart illustrating the sequence of an importance level determining process.

[0028] FIG. 9 is a table illustrating an example of the chapter arrangement of an object scene and a chapter importance level set to each chapter.

[0029] FIG. 10 is a flow chart illustrating the sequence of a chapter selecting and reproducing process.

[0030] FIG. 11 is a brief diagrammatic view illustrating an example of the layout of a chapter list screen.

[0031] FIG. 12 is a brief diagrammatic view illustrating an example of the layout of a scene list screen.

[0032] FIG. 13 is a flow chart illustrating the sequence of a VIP setting process.

[0033] FIG. 14 is a brief diagrammatic view illustrating an example of a layout of a pre-photographing VIP setting screen.

[0034] FIG. 15 is a brief diagrammatic view illustrating an example of the layout of a VIP photographing screen.

DESCRIPTION OF THE EMBODIMENTS

[0035] Embodiments of the present invention will now be described with reference to the accompanying drawings.

(1) First Embodiment

(1-1) Structure of Recording and Reproducing Apparatus

[0036] In FIG. 1, reference numeral **1** represents a video camera of the embodiment. The video camera **1** is a hybrid video camera equipped with a DVD drive (not shown) and a built-in hard disc drive **2**. A DVD **3** to be mounted on the DVD drive includes a plurality of types such as DVD-R, DVD-RW, DVD-RAM, DVD+R, DVD+RW and HD (High Definition)-DVD. The type of DVD **3** applicable to the video camera **1** is not specifically limited.

[0037] In the video camera **1**, a user interface **4** is constituted of various operation buttons, a touch panel adhered to a screen of a display **6** to be described later. In accordance with a user operation command input from the user interface **4**, a system controller **5** executes a corresponding control process to record a photographed image in the hard disc drive **2** and DVD **3** loaded in the DVD drive and to reproduce a photographed image recorded in the hard disc drive **2** and DVD **3** and display the reproduced image on the display **6**.

[0038] The system controller **5** is actually a microcomputer constituted of a central processing unit (CPU), an internal memory and the like. When a record button in the user interface **4** is depressed after a record mode is selected upon operation of the user interface **4**, the system controller **5** drives an image sensor **7** constituted of a charge coupled device (CCD), complementary metal oxide semiconductor (CMOS) transistors and the like.

[0039] An optical image of an object is converged by a lens **8** on an optical reception plane of the image sensor **7**. The image sensor **7** photoelectrically converts the optical image, and sends an obtained photographed image signal to an analog/digital converter **9**. The analog/digital converter **9** converts the analog photographed image signal into a digital image signal, and sends the obtained digital information to a compressor/decompressor (CODEC) **10**.

[0040] CODEC **10** transfers the supplied image information to the display **6** via a bus **11**. The display **6** may be a liquid crystal display, an organic EL display or the like, and displays a photographed image (through image) basing upon the supplied image information.

[0041] CODEC **10** encodes the supplied image information by a predetermined compression encoding method such as a Moving Picture Expert Group (MPEG) method, and stores the obtained encoded image information, and the image information not subjected to encoding, in a random access memory (RAM) **12** via the bus **11**.

[0042] Under control of the system controller **5**, the encoded image information stored in RAM **12** is thereafter read by a hard disc drive controller **13** or a DVD drive controller **14**, and recorded in the hard disc drive **2** or DVD **3**.

[0043] The image information stored in RAM **12** is read by a face recognizing execution unit **15**. The face recognizing execution unit **15** executes a predetermined face recognizing process for the photographed image corresponding to the image information, and supplies the recognition results to the hard disc drive controller **13** or DVD drive controller **14** storing the encoded image information, as face recognizing management information to be described later. In this manner, the face recognizing management information is recorded in the hard disc drive **2** or DVD **3**, in correspondence with the encoded image information.

[0044] When a reproduction button of the user interface **4** is depressed after a reproduction mode is selected upon operation of the user interface **4**, the system controller **5** controls a corresponding one of the hard disc drive controller **13** and DVD drive controller **14** to make the hard disc drive controller **13** or DVD drive controller **14** read and transmit the encoded image information to CODEC **10** via the bus **11**.

[0045] Under control of the system controller **5**, CODEC **10** executes a predetermined decoding process for the encoded image information supplied from the hard disc drive controller **13** or DVD drive controller **14**, and transmits the obtained reproduced image information to the display **6** via the bus **11**. In this manner, a reproduced image corresponding reproduced image information is displayed on the display **6**.

[0046] An image size converter **16** is also connected to the bus **11**. Under control of the system controller **5**, the image size converter **16** extracts image information on a start frame of each scene and image information on a start frame of each chapter, from the image information stored in RAM **12** and image information read from the hard disk drive **2** or DVD **3** and decoded by CODEC **10**, for example, during photographing. The image size converter **16** converts the extracted image information into image information on thumbnail images of predetermined sizes, and stores the image information on the thumbnail images of a start frame of the scene and a start frame of each chapter in the hard disc drive **2** or DVD **3** storing the encoded image information on the scene, in correspondence with the scene.

[0047] It is assumed that the video camera **1** has other hardware and functions of a general video camera, such as light emitting diodes (LED's) for turning on during power-on, charging, access to the hard disc drive **2** or DVD **3**, or the like, and batteries for supplying power to each circuit or the like.

[0048] In the following description, it is assumed that a photographed image is recorded in the hard disc drive **2** during photographing, and the photographed image is dubbed in DVD **3** after photographing. However, a photographed image may be recorded in DVD **3** during photographing, and the photographed image is dubbed in the hard disc drive **2** after photographing.

(1-2) Scene Management Information

[0049] During photographing with the video camera **1**, encoded image information as well as management information of each scene (hereinafter called scene management information) is recorded in the hard disc drive **2**. The scene management information is constituted of information for managing a scene such as chapter management information and face recognizing management information. The chapter management information includes information on a position, length, importance level, summary and the like of a start frame of each chapter. The face recognizing management information includes information on a position of a frame on which a face recognized by the face recognizing execution unit appears during photographing, an expression and size of the face on the frame, and the like.

[0050] FIG. 2 illustrates an example of the chapter management information. The chapter management information **20** illustrated in FIG. 2 is constituted of chapter ID information **21**, start frame position information **22** and chapter importance level information **23**, respectively of each chapter set in a scene.

[0051] The chapter ID information **21** is information representative of a unique ID given to each chapter (hereinafter called a chapter ID), and the start frame position information **22** is information representative of a position (hour, minute, second and frame number) of a start frame of the corresponding chapter. The chapter importance level information **23** is information representative of an importance level set to the corresponding chapter (herein after called a chapter importance level). The details of the chapter importance level will be described later. Under control of the system controller **5**, the chapter management information **20** is stored in the hard disc drive **2** in correspondence with the encoded image information of the scene.

[0052] FIG. 3 illustrates an example of the face recognizing management information. The face recognizing management information **24** illustrated in FIG. 3 is constituted of face ID information **25** for each face recognized in the corresponding scene, path/file name information **26** and frame position information **27**.

[0053] The face ID information **25** is information representative of a unique ID given to each face recognized by the face recognizing execution unit **15** (hereinafter called a face ID), and the path/file name information **26** is information representative of a path to the image file of an image of a corresponding face (hereinafter called a face image) or a file name of the image file. A face image to be stored in the image file may be an image captured when the person is recognized first in a frame, or an image capturing the best expression of the person in the scene after distinguishing a good expression such as smile during the face recognizing process.

[0054] The frame position information **27** is information representative of a frame position (hour, minute, second and frame number) where a corresponding face is recognized. The frame position information **27** includes all frame positions on which a corresponding face appears. Therefore, the number of frame positions contained in the frame position information **27** becomes larger the larger the number of times when the face (person) appears on the scene. A type of a face expression in a frame may be recorded in correspondence with each frame position.

[0055] As described above, the face recognizing execution unit **15** stores the face recognizing management information **24** in the hard disc drive **2** in correspondence with the encoded image information of a photographed image recorded at that time.

(1-3) Chapter Importance Level Setting Method

[0056] FIG. 4 illustrates an example of an image photographed by setting a face recognizing function “valid” and displayed on the display **6**. As the face recognizing function of the video camera **1** is set “valid”, a rectangular frame **31** is displayed in a photographed image **30** displayed on the display **6**, surrounding a face of a person detected by the face recognizing function. As the face recognizing function is set “invalid”, this frame **31** is not displayed.

[0057] FIG. 5 illustrates the contents of a process (hereinafter called a photographed image recording process) of recording an image photographed by setting the face recognizing function “valid” in the hard disc drive **2**, to be executed by the system controller **5**. The system controller **5** executes the photographed image recording process illustrated in FIG. 5 in accordance with a corresponding control program stored in the internal memory.

[0058] More specifically, as the record button of the user interface **4** is depressed after the record mode is selected, the system controller **5** starts the photographed image recording process. First, the analog/digital converter **9** and CODEC **10** are controlled to store image information of the photographed image and encoded image information in RAM **12**, and the hard disc drive controller **13** is controlled to read the encoded image information of one frame from RAM **12** and store the read encoded image information in the hard disc drive **2** (Step SP**1**).

[0059] Next, the system controller **5** controls the face recognizing execution unit **15** to read from RAM **12** the image information of the same frame as the frame whose encoded image information was read from RAM **12** by the hard disc drive controller **13** at Step SP**1** and execute the face recognizing process for the photographed image corresponding to the image information (Step SP**2**).

[0060] In this case, for example, the face recognizing execution unit **15** executes the face recognizing process by template matching, for example, using an average face. However, if a user forms a VIP list registering VIP's before photographing, the face recognizing process may be executed by template matching using the VIP list. After the face recognizing process is completed, the face recognizing execution unit **15** reflects the results of the face recognizing process upon the face recognizing management information described with reference to FIG. 3 (updating the face recognizing management information).

[0061] Next, the system controller **5** judges whether encoded image information of all frames obtained through photographing has been recorded in the hard disc drive **2** (Step SP**3**). If this judgment is negated, the flow returns to step SP**1**, and the system controller **5** repeats similar processes (SP**1** to SP**3**, to SP**1**).

[0062] If the judgment is affirmed at Step SP**3** after the encoded image information of all frames obtained through photographing is recorded in the hard disc drive **2**, the system controller **5** terminates the photographed image recording process.

[0063] The face recognizing process at Step SP**2** of the photographed image recording process may be executed for each frame as described above, or may be executed once for several frames. As the face recognizing process is executed once for several frames, a process load on the face recognizing execution unit **15** can be reduced.

[0064] A function (hereinafter called a post-photographing face recognizing function) may be provided allowing a face recognizing process to be executed for an image already photographed by setting the face recognizing function “invalid”, through operation of a menu or the like. The face recognizing management process similar to that illustrated in FIG. 3 can be obtained by this function. With this post-photographing face recognizing function, a chapter importance level can be set using the face recognizing function as will be described later, even for a scene photographed with another video camera without the face recognizing function. This is very convenient for a user.

[0065] Next, description will be made on a method of determining an importance level of each chapter in one scene in accordance with the results (face recognizing management information **24** (FIG. 3)) of the face recognizing process obtained in the manner described above.

[0066] It is assumed in the following that at least one chapter is set in each scene. A chapter forming method includes a method of making a user manually determine the position of each chapter, a method of automatically setting the position of each chapter where a luminance change is large in the scene, a method of automatically setting chapters at equal pitch of several minutes to several ten minutes, and other methods. In this embodiment, a chapter may be set by any one of these methods.

[0067] FIG. 6 illustrates the process contents of the system controller **5** regarding a chapter importance level setting function of setting an importance level of each chapter in a scene. As the user interface **4** is operated and a first screen display request is input, the system controller **5** executes a chapter importance level setting process illustrated in FIG. 6, in accordance with a corresponding program stored in the internal memory (not shown).

[0068] More specifically, upon input of the first screen display request, the system controller **5** reads first the chapter management information **20** (FIG. 2) and face recognizing management information **24** (FIG. 3), stored in the hard disc drive **2**, of a scene to be processed at that time (hereinafter called an object scene), and displays a VIP deciding screen **40** illustrated in FIG. 7 on the display **6**, by using the chapter management information **20** and face recognizing management information **24** (Step SP**10**).

[0069] The VIP deciding screen **40** is a screen to be used for a user to decide a VIP in the object scene. The VIP deciding screen **40** displays face images **41** of all persons recognized during photographing the object scene. Each face image **41** is displayed in accordance with image data read from the image file identified by a corresponding path/file name information **26** (FIG. 3) in the face recognizing management information **24** described with reference to FIG. 3.

[0070] A user can select a VIP from the face images **41** of persons displayed on the VIP deciding screen **40**. A plurality of VIP's may be selected. Faces of objects having a high appearance frequency such as family members may be registered beforehand in the video camera **1** as a VIP list, and the faces of only the registered persons are displayed on the VIP deciding screen **40**. In this manner, since the face of a person not associated with the object and photographed in the background is not displayed, it becomes easy for a user to decide a VIP.

[0071] After the face image **41** of the person desired to be set as a VIP is selected by a predetermined operation, the user depresses a "decide" button **42** to register the selected person as a VIP. If an operation of deciding the chapter importance level is desired to be terminated, a "cancel" button **43** is depressed. If it is arranged in such a manner that a user can set whether such a VIP list is always used or not, user-friendliness of the video camera **1** can be improved.

[0072] Next, the system controller **5** stands by until a VIP is decided using the VIP deciding screen **40** (Step SP**11**). As the user decides a VIP, an importance level of each chapter of the object scene is determined in accordance with the decided VIP (Step SP**12**).

[0073] The system controller **5** reflects the importance level of each chapter decided at Step SP**12** upon the chapter management information **20** described with reference to FIG. 2 (Step SP**13**), to thereafter terminate the chapter importance level setting process.

[0074] FIG. 8 illustrates the specific process contents of the system controller **5** in the chapter importance level setting process at Step SP**12**.

[0075] In the chapter importance level setting process at Step SP**12**, the system controller **5** starts the importance level setting process. First, the number of appearance frequencies of the VIP decided by the user using the VIP deciding screen **40** (FIG. 7) is counted for each chapter of the object scene (Step SP**14**).

[0076] More specifically, the system controller **5** prepares counters corresponding in number to the number of chapters in the scene, on the inner memory of the system. The system controller **5** reads the positions of all frames on which the VIP decided by the user using the VIP deciding screen **40** appears, from the face recognizing management information **24** (FIG. 3), by using a face ID of the VIP, and judges to which chapter each frame belongs, by referring to the chapter management information **20** (FIG. 2). In accordance with the judgment results, the system controller **5** increments by "1" the count of the counter corresponding to the chapter to which the frame belongs, for each frame on which the VIP appears. The system controller **5** executes these processes for all VIP's decided by the user using the VIP deciding screen **40**.

[0077] Next, the system controller **5** normalizes the counts of the counters in a range from "1" to "5" (Step SP**15**), and decides a value obtained by subtracting each normalized value from "6", as an importance level of each chapter corresponding to the counter (Step SP**16**).

[0078] With these processes, the highest chapter importance level of "1" is set to the chapter on which the VIP appears most frequently, and the lowest chapter importance level of "5" is set to the chapter on which the VIP appears least frequently. Thereafter, the system controller **5** terminates this importance level deciding process and returns to the chapter importance level setting process.

[0079] If a user selects a plurality of VIP's on the VIP deciding screen **40**, the chapter importance levels may be weighted to allow the user to set more important persons. User-friendliness of the video camera **1** can therefore be improved further.

(1-4) Reproducing Method Using Chapter Importance Level

[0080] Next, description will be made on an object scene reproducing method basing upon the chapter importance level of each chapter set in the manner described above. It is assumed in the following description that the chapter importance level is set in five steps, "1" being the highest chapter importance level, and "5" being the lowest chapter importance level. In the following, the chapter importance levels are distinguished for the purposes of convenience by calling the chapter importance level "1" superexpress, the chapter importance level "3" express, and the chapter importance level "5" standard.

[0081] FIG. 9 illustrates an example of the chapter structure of an object scene and a chapter importance level set to each chapter. In the example illustrated in FIG. 9, the object scene is divided into nine chapters having chapter ID's of "001" to "009". The chapter importance level "1" is set to two chapters having the chapter ID's "002" and "005", the chapter importance level "3" is set to two chapters having the chapter ID's "004" and "009", and the chapter importance level "5" is set to the remaining chapters having the chapter ID's "001", "003", "006" to "008".

[0082] In this example, as reproduction is performed by selecting as a reproducing mode a "standard reproducing mode" from the menu, all chapters are sequentially reproduced in an order of smaller chapter ID, irrespective of the chapter importance level set to each chapter. Namely, in the "standard reproducing mode", the chapters having the chapter importance level "5" or smaller (the chapters having the chapter importance levels "1" to "5", i.e., all chapters) are reproduced in this mode of the embodiment.

[0083] Further, as a user starts reproducing by selecting as the reproducing mode an "express reproducing mode", the video camera **1** reproduces first the chapter having the chapter importance level "1" and chapter ID "002", then the chapter having the chapter importance level "3" and the chapter ID "004", and next the chapter having the chapter importance level "1" and the chapter ID "005". Lastly, the video camera **1** reproduces the chapter having the importance

level **3** and the chapter ID "009" to thereafter terminate scene reproducing. Namely, in the express reproducing mode", only the chapters having the chapter importance level "3" or smaller (only the chapters having the importance levels "1" to "3") are reproduced. Therefore, as cue skipping is performed during reproducing in the "express reproducing mode", reproducing starts from the start frame of the next chapter having the chapter importance level "3" or smaller.

[0084] Furthermore, as a user starts reproducing by selecting as the reproducing mode a "superexpress reproducing mode", the video camera **1** reproduces first the chapter having the chapter importance level "1" and chapter ID "002", then the chapter having the chapter importance level "1" and the chapter ID "005" to thereafter terminate scene reproducing. Namely, in the "super express reproducing mode", only the chapters having the chapter importance level "1" are reproduced.

[0085] Therefore, the video camera **1** reproduces always the chapter having the chapter importance level "1" as any of the reproducing modes is selected, and each of other chapters is reproduced only when the reproducing mode is selected reproducing the chapter having the chapter importance level same as or smaller than that set to each of other chapters.

[0086] By utilizing this function (hereinafter called a chapter select reproducing function), the superexpress reproducing mode is used for confirming roughly the contents of the object scene, and at the stage when reproducing comes near the images whose contents are desired to be confirmed in detail, the reproducing mode is switched to the standard reproducing mode. In this manner, the contents of the object scene can be confirmed efficiently and conveniently. The superexpress reproducing mode is very convenient for a user desiring to confirm the contents of a scene in short time.

[0087] FIG. 10 illustrates the process contents of the system controller **5** regarding the chapter select reproducing function. The system controller **5** executes the chapter select reproducing process illustrated in FIG. 10 in accordance with a control program stored in the internal memory.

[0088] Namely, as a reproducing operation start command is input after the "standard reproducing mode", "express reproducing mode" or "superexpress reproducing mode" is selected, the system controller **5** starts the chapter select reproducing process to first read the chapter management information of the object scene from a corresponding hard disc drive **2** or DVD **3** (Step SP**20**).

[0089] Next, in accordance with the ID information contained in the chapter management information, the system controller **5** selects the first chapter (e.g., the chapter having the smallest chapter ID) (Step SP**21**), and judges whether the chapter importance level of the chapter is a predetermined threshold value or smaller set to the present reproducing mode (Step SP**22**). The threshold value is "5" if the "standard reproducing mode" is set, "3" if the "express reproducing mode" is set, and "1" if the "superexpress reproducing mode" is set.

[0090] If a judgment at Step SP**22** is negated, the flow advances to Step S**24**, whereas if the judgment is affirmed, the system controller **5** controls CODEC **10** to reproduce the chapter and display the reproduced image on the display (Step SP**23**).

[0091] Next, the system controller **5** refers to the chapter management information to judge whether the chapter next to the chapter selected at Step SP**21** exists (Step SP**24**). If this judgment is affirmed, the flow returns to Step SP**21** to repeat similar processes by sequentially switching the chapter to be selected at Step SP**21** (Steps SP**21** to SP**24**, to SP**21**).

[0092] As the processes at Steps SP**21** to SP**24** are completed for all chapters and the judgment at Step SP**24** is negated, the system controller **5** terminates the chapter select reproducing process.

[0093] Next, description will be made on an approach to making a user to easily confirm the chapter importance level set to each chapter in a scene.

[0094] FIG. 11 illustrates a chapter list screen **50** displayed on the display **6** by a user menu operation. For each chapter of an object scene, a thumbnail image **51** set to the chapter, and chapter management information **52** such as a lapse time from the scene start, a chapter importance level and the like, are displayed on the chapter list screen **50**.

[0095] More practically, when a display command for the chapter list screen **50** is input by operating the user interface **4**, the system controller **5** controls a corresponding hard disc drive controller **13** or DVD drive controller **14** to read from the hard disc drive **2** or DVD **3** the chapter management information **20** (FIG. 2) of the object scene, and the image information on the thumbnail image **51** of the start frame of each chapter stored in correspondence with the object scene. Then, the system controller **5** operates to display the thumbnail image **51** of the start frame of each chapter on the chapter list screen **50** in accordance with the read image information, and display the management information **52** of each chapter based on the chapter management information **20**, on the chapter list screen **50**, in correspondence with the thumbnail image **51**.

[0096] In this manner, a user can know the chapter having a high chapter importance level from the chapter list screen **50**, and can find an important image quickly.

[0097] Next, description will be made on an approach to making a user easily confirm a scene set with a chapter importance level.

[0098] FIG. 12 illustrates a scene list screen displayed on the display by a user menu operation. A thumbnail image **54** of each scene stored in the hard disc drive **2** or DVD **3** is displayed on the scene list screen **53**.

[0099] More practically, when a display command for the scene list screen **53** is input by operating the user interface **4**, the system controller **5** controls a corresponding hard disc drive controller **13** or DVD drive controller **14** to read from the hard disc drive **2** or DVD **3** the image information on the thumbnail image **54** of the start frame of every scene stored in the hard disc drive **2** or DVD **3** designated by the user. Then, the system controller **5** operates to display the thumbnail image **54** of the start frame of each scene on the scene list screen **53**, in accordance with the read image information.

[0100] In this case, the system controller **5** refers to the chapter management information **20** (FIG. 2) of each scene, and displays an icon **55** having a predetermined shape on the thumbnail image **54** of the scene set with the chapter importance level.

[0101] It is therefore possible for a user to judge from the icon **55** whether a chapter importance level is set to the scene, for example, to be reproduced. The contents of the scene displayed with the icon **55** can be confirmed efficiently by immediately performing a reproducing operation by the reproducing method using the chapter importance level as described above. For the scene not displayed with the icon, the chapter importance level setting process is executed before the reproduction operation so that the reproducing operation by the above-described reproducing method can be performed.

(1-5) Scene Dubbing Process

[0102] Next, description will be made on a process of dubbing encoded image information recorded in the hard disc drive **2** into DVD **3**.

[0103] When the scene set with the chapter importance level is dubbed from the hard disc drive **2** into DVD **3** in the video camera **1**, the system controller **5** copies not only the encoded image information and scene management information (chapter management information **20** (FIG. 2) and face recognizing management information **24** (FIG. 3) but also an image file of face images of faces registered in the face recognizing management information **24** contained in the scene management information, into DVD **3**. Therefore, even if the encoded information in the hard disc drive **2** is erased, reproducing using a chapter importance level and re-setting a chapter importance level can be performed immediately.

(1-6) Effects of the Embodiment

[0104] According to the video camera of the embodiment described above, the chapter importance level of each chapter can be set basing upon the results of the face recognizing process executed during photographing. It is therefore possible for a user to quickly find a chapter on which an object person (VIP) appears frequently. Further, a chapter having a relevant chapter importance level is selectively reproduced, among chapter importance levels of respective chapters, so that a user can confirm the whole contents of the scene easily and in short time and can find an object scene quickly. In this manner, user-friendliness of the video camera **1** can be improved considerably.

(2) Second Embodiment

[0105] In FIG. 1, reference numeral **60** represents a video camera of the second embodiment. The video camera **60** of the second embodiment is configured like the video camera **1** of the first embodiment, excepting that the chapter importance level setting method is different from that of the first embodiment.

[0106] Namely, in the first embodiment, a user decides a VIP by using the VIP deciding screen **40** (FIG. 7) after photographing, and in accordance with the decision, a chapter importance level of each chapter is set. In contrast, in the second embodiment, the face recognizing process is executed only for a VIP decided by a user before photographing, and in accordance with the results of the face recognizing process, a chapter importance level of each chapter is set.

[0107] FIG. 13 illustrates the process contents of the system controller regarding a VIP setting process for a user to set a VIP before photographing, in the chapter importance setting method of the second embodiment. The system controller **61** executes the VIP setting process in accordance with a control program stored in the inner memory (not shown).

[0108] Namely, when a VIP setting mode is selected by operating the user interface **4**, the system controller **61** starts the VIP setting process to first display a pre-photographing VIP setting screen **70** illustrated in FIG. 14 on the display **6** (Step SP**30**).

[0109] Next, the system controller **61** stands by until one of first and second VIP deciding method select buttons **71** and **72** displayed on the pre-photographing VIP setting screen **70** (Step SP**31**) is depressed. The first VIP deciding method select button **71** is a button corresponding to a mode of preparing for photographing a VIP, and the second VIP deciding method select button **72** is a button corresponding to a mode of deciding a VIP among persons recognized during photographing already performed, similar to the first embodiment.

[0110] As one of the first and second VIP deciding method select buttons **71** and **72** is depressed, the system controller **61** judges whether the depressed button is the first VIP deciding method select button **71** (Step SP**32**).

[0111] As this judgment is affirmed, the system controller **61** drives the image sensor **7**, analog/digital converter **9** and CODEC **10** to display an image illustrated in FIG. 15 and photographed at that time by a user, on the display **6** (Step SP**34**). In this case, the user photographs a VIP to be registered with the video camera **60**.

[0112] Next, during photographing a VIP, the system controller **61** drives the face recognizing execution unit **15** to execute the face recognizing process for the VIP under photographing (Step SP**35**). After completion of the face recognizing process, the system controller **61** makes the face recognizing execution unit **15** form the face recognizing management information **24** (FIG. 3) based upon the face recognizing process results, and store this information in the hard disc drive **2** (Step SP**38**). Thereafter, the system controller **61** terminates the VIP setting process.

[0113] If the judgment at Step SP**32** is negated (i.e., if the second VIP deciding method select button **72** is depressed), the system controller **61** displays the VIP display screen **40** described with reference to FIG. 7 on the display **6** (Step SP**36**).

[0114] Next, the system controller **61** stands by until a VIP is selected from the VIP display screen **40** (Step SP**37**). As a VIP is selected, the face recognizing execution unit **15** is instructed to form the face recognizing management information **24** illustrated in FIG. 3 registering only information on the selected VIP (Step SP**38**). Thereafter, the system controller **61** terminates the VIP setting process.

[0115] With this arrangement, the system controller **61** controls the face recognizing execution unit **15** to reflect only the results of the face recognizing process for the VIP registered in the manner described above, upon the face recognizing management information **24** (FIG. 3), during photographing. Each time scene photographing is completed, the importance level setting process described with reference to FIG. 8 is executed to determine a chapter importance level of each chapter set in the scene, and in accordance with the determined chapter importance level, the chapter management information **20** (FIG. 2) is updated.

[0116] As described above, the video camera **60** of the embodiment executes the face recognizing process only for a VIP decided before moving image photographing, and in accordance with the results of the face recognizing process, a chapter importance level of each chapter is set. It is therefore possible to facilitate setting of the chapter importance level of each chapter. Further, since the video camera **60** registers a VIP in advance as described above, it is possible to avoid the following phenomenon. Namely, in performing autofocus and autoexposure utilizing face recognition, if the face of another person photographed together with a VIP is recognized by chance, the optimum focus and exposure are set to this other person, and the object VIP is not photographed well.

(3) Other Embodiments

[0117] In the first and second embodiments, the present invention is applied to the video camera **1**, **60** configured as illustrated in FIG. 1. The present invention is not limited thereto, but is also applicable to video cameras having various structures, apparatus other than video cameras such as DVD recorders, electronic still cameras and mobile phones provided with a moving image photographing function.

[0118] Further, in the first and second embodiments, although the hard disc drive **2** and DVD **3** are adopted as recording media for recording photographed images, the present invention is not limited thereto, but recording media other than the DVD and hard disc drive may also be adopted including a Blu-ray disc (BD), a compact disc (CD), a mini disc (MD), a semiconductor memory and the like.

[0119] Furthermore, in the first and second embodiments, although the hard disc drive **2** and a DVD drive as the recording/reproducing unit for recording and reproducing image information on photographed scenes relative to recording media are built in the video camera **1**, **60**, the present invention is not limited thereto, but may adopt an external mount type drive connected by USB (Universal Serial Bus), eSATA (External Serial Advanced Technology Attachment) and the

like as the recording and reproducing unit.

[0120] Still further, in the first and second embodiments, although one system controller **5**, **61** is constituted of: an importance level setting unit for setting a chapter importance level of each chapter in accordance with the results of a face recognizing process for a VIP set by a user; a controller for controlling the hard disc drive **2** and DVD drive so as to selectively reproduce a chapter having a relevant importance level, among importance levels of respective chapters; and a VIP setting unit for setting as a VIP a person corresponding to a face image selected by a user from a list of face images displayed on the display, the present invention is not limited thereto, but the importance level setting unit, control unit and VIP setting unit may be structured discretely.

[0121] The present invention is widely applicable to various recording and reproducing apparatus such ad DVD recorders in addition to video cameras.

[0122] The preferred embodiments of the present invention have been described above. According to the present invention, a particular chapter can be selectively reproduced in accordance with user settings so that a user can find quickly a chapter on which a desired person appears. Further, since a particular chapter based on user settings can be selectively reproduced, a user can know the whole contents of a scene in short time and easily.

[0123] It should be further understood by those skilled in the art that although the foregoing description has been made on embodiments of the invention, the invention is not limited thereto and various changes and modifications may be made without departing from the spirit of the invention and the scope of the appended claims.

Original

Classifications

IPC	CPC
H04N5/775	G06F16/745
G06F16/73	G06K9/00711
G06F16/74	G11B27/034
G06K9/00	G11B27/105
G11B27/034	G11B27/28
G11B27/10	G11B2220/455
G11B27/28	G06K9/00
G11B27/30	H04N5/77
G11B27/34	H04N5/772
H04N5/77	H04N5/781
H04N5/781	H04N5/85
H04N5/85	H04N9/8042
H04N5/917	G06F16/73
H04N9/804	G06K9/00288
H04N21/434	G11B27/30
	G11B27/34
	H04N21/4347

Persons

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Current Assignees

Original	Standardized	Normalized
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Inventor(s)

Original
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Legal representative(s)

Original	Standardized	Normalized
Mattingly & Malur, PC	(/api/control?query=ag:("Mattingly%20%26%20Malur%2C%20PC")&autosearch=true)	

Legal information

Status

Event	Date
Granted	2019-09-17
Filed	2018-12-13

Ownership

Date from	Date to	Name	Standardized	Normalized
2008-05-19		Maxell, Ltd.	MAXELL	

Payment status

Date	Payment status	Description

Litigation

Date	Docket number	Comments	Judgement

CourtLink®

Citations

Citation type	Publication number	Citation relevance	Citation origin	Publication date	Title	Original standardized assignee
backward	US5809202A		By applicant	1998-09-15		
backward	US7474764B2		By applicant	2009-01-06		
backward	US7496211B2		By applicant	2009-02-24		
backward	US7634662B2		By applicant	2009-12-15		
backward	US7853897B2		By applicant	2010-12-14		
backward	US20020175997A1		By applicant	2002-11-28		
backward	US20030107592A1		By applicant	2003-06-12		
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☐	backward	US20070162924A1	By applicant	2007-07-12	PDF
☐	backward	US20070171296A1	By applicant	2007-07-26	PDF
☐	backward	US20070237360A1	By applicant	2007-10-11	PDF
☐	backward	US20080019665A1	By applicant	2008-01-24	PDF
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☐	backward	US20080144890A1	By applicant	2008-06-19	PDF
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1 - 20 of 59

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JP Office Action for Japanese Patent Application No. 2012-063504, dated Apr. 2, 2013.
JP Office Action for Japanese Patent Application No. 2012-063504, dated Oct. 30, 2012.
United States Non-Final Office Action received in corresponding U.S. Appl. No. 15/898,351 dated Jul. 11, 2019.

Similar documents

The similarity check is done by matching this document to all documents in the database. Only the title and abstract text are matched, resulting in a score.

LexisNexis

Results for: **10176848 OR 10,176,848**

News

1. US Patent Issued to MAXELL on Jan. 8 for "Recording and reproducing apparatus and method thereof" (Japanese Inventor)

US Fed News | Jan 08, 2019 | 263

... *For further information, including images, charts and tables, please visit: http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=**10176848**&OS=**10176848**&RS=**10176848** For any query with respect to this article or any other ... ... Va. , Jan. 8 -- United States Patent no. **10,176,848** , issued on Jan. 8, was assigned to MAXELL LTD. (Kyoto, ...

2. Certain Mobile Electronic Devices and Laptop Computers; Institution of Investigation

Government Publications & Documents | Aug 24, 2020 | REGULATORY DOCUMENTS | 925

... U.S. Patent No. 10,129,590 ("the '590 patent"); and U.S. Patent No. **10,176,848** ("the '848 patent"). The complaint further alleges that an industry in ...

3. Federal Register: Certain Mobile Electronic Devices and Laptop Computers; Institution of Investigation Pages 52153 - 52154 [FR DOC #2020-18537]

Impact News Service | Aug 24, 2020 | 970

... U.S Patent No. 10,129,590 (``the '590 patent''); and U.S Patent No. **10,176,848** (``the '848 patent''). The complaint further alleges that an industry in ...

4. INTERNATIONAL TRADE COMMISSION ISSUES NOTICE: CERTAIN MOBILE ELECTRONIC DEVICES AND LAPTOP COMPUTERS; INSTITUTION OF INVESTIGATION

US Fed News | Aug 24, 2020 | 282

... No. 10, 129, 590 ("the '590 patent"); and U.S. Patent No. **10, 176, 848** ("the '848 patent"). The complaint further alleges that an industry in ...

5. Investigations; Determinations, Modifications, and Rulings, etc.: Certain Mobile Electronic Devices and Laptop Computers

Impact News Service | Aug 25, 2020 | 921

... U.S Patent No. 10,129,590 ("the '590 patent"); and U.S Patent No. **10,176,848** ("the '848 patent"). The complaint further alleges that an industry in ...

6. ITC: Certain Mobile Electronic Devices, Laptop Computers

Targeted News Service | Aug 22, 2020 | 944 | Targeted News Service

... U.S. Patent No. 10,129,590 ("the '590 patent"); and U.S. Patent No. **10,176,848** ("the '848 patent"). The complaint further alleges that an industry in ...

7. U.S. International Trade Commission Investigating Whether Apple Infringed on Maxell Patents

Newstex Blogs | Aug 19, 2020 | 437 | Juli Clover

... U.S. Patent No. 10,129,590 ("the '590 patent"); and U.S. Patent No. **10,176,848** ("the '848 patent"). The complaint further alleges that an industry in ...

8. No Headline In Original

Diarios Oficiais - Brazil | Sep 05, 2017 | NORMAL; Pg. 17 | 1921

... (Solicitação feita em: 09/08/2017). 07/011.593/2003 - MARIÂNGELA DE OLIVEIRA LOURENÇO - **10/176.848** -0, Agente de Administração, nos períodos de 01/10/1989 a 30/04/1991, 21/05/1991 ...

9. BUILDING PERMITS

The Capital (Annapolis, MD) | May 14, 2009 | RECORD; Pg. A15 | 1550

... detached garage, $51,818. 104 Pine Drive, Daria Hardin, interior remodeling, $ **10,176. 848** South Holly Drive, Profundum Trust, deck, $2,634. 1734 Westmoreland Trail, Robert ...
... detached garage, $51,818. 104 Pine Drive, Daria Hardin, interior remodeling, $ **10,176. 848** South Holly Drive, Profundum Trust, deck, $2,634. 1734 Westmoreland Trail, Robert ...

10. Philippine Stock Exchange as of November 15, 2019

BusinessWorld | Nov 18, 2019 | Pg. S2/2 | 6722

... 55,254 Cebu Air, Inc. 162.250 94.3 94.3 91 91.95 94.3 (**10,176,848**) ICT 148.5 92.3 244,473 Int'l. Cont. Term'l. Serv., Inc. 1,242,200 ...

11. Head Line: US Patent granted to MAXELL, LTD. on January 8, 2019 titled as "Recording and reproducing apparatus and method thereof"

Plus Patent News | Jan 08, 2019 | 198

... United States Patent and Trademark Office has granted patent no. **10,176,848** on January 8, 2019, to MAXELL, LTD. titled as "Recording and ...

12. LED with Smd Rechargeable Work Light

Tenders Monitor Africa-Asia | Jul 05, 2018 | 155

... Solapur Tender Closing Date Time: 27/07/2018 11:30 Document : http://www.bidsinfo.com /adminexe/documents/-IN2~20180705- **10176848**.html...

PTO/SB/57 (01-18)
Approved for use through 11/30/2021. OMB 0651-0064
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

(Also referred to as FORM PTO-1465)

REQUEST FOR *EX PARTE* REEXAMINATION TRANSMITTAL FORM

Address to:
Mail Stop *Ex Parte* Reexam
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attorney Docket No.: 2638-19.06

Date: December 23, 2020

1. ☒ This is a request for *ex parte* reexamination pursuant to 37 CFR 1.510 of patent number 10,176,848 issued January 8, 2019. The request is made by:
   ☐ patent owner. ☒ third party requester.

2. ☒ The name and address of the person requesting reexamination is:
   Apple Inc.
   One Apple Park Way
   Cupertino, CA 95014

3. Requester ☐ asserts small entity status (37 CFR 1.27) or ☐ certifies micro entity status (37 CFR 1.29). Only a patent owner requester can certify micro entity status. Form PTO/SB/15A or B must be attached to certify micro entity status.

4. This request is accompanied by payment of the reexamination fee as set forth in:
   ☒ 37 CFR 1.20(c)(2); **or**
   ☐ 37 CFR 1.20(c)(1). **In checking this box for payment of the fee set forth in 37 CFR 1.20(c)(1), requester asserts that this request has forty (40) or fewer pages and complies with all other requirements of 37 CFR 1.20(c)(1).**

   Payment of the reexamination fee is made by the method set forth below.
   a. ☐ A check in the amount of $_____ is enclosed to cover the reexamination fee;
   b. ☒ The Director is hereby authorized to charge the reexamination fee to Deposit Account No. 50-6159;
   c. ☐ Payment by credit card. Form PTO-2038 is attached; **or**
   d. ☒ Payment made via EFS-Web.

   ☒ In addition, the Director is hereby authorized to charge any fee deficiencies to Deposit Account No. 50-6159.

5. ☒ Any refund should be made by ☐ check or ☒ credit to Deposit Account No. 50-6159. 37 CFR 1.26(c). If payment is made by credit card, refund must be to credit card account.

6. ☒ A copy of the patent to be reexamined having a double column format on one side of a separate paper is enclosed. 37 CFR 1.510(b)(4).

7. ☐ CD-ROM or CD-R in duplicate, Computer Program (Appendix) or large table
   ☐ Landscape Table on CD

This collection of information is required by 37 CFR 1.510. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) a request for reexamination. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop *Ex Parte* Reexam, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

8. ☐ Nucleotide and/or Amino Acid Sequence Submission
If applicable, items a. – c. are required.
   a. ☐ Computer Readable Form (CRF)
   b. Specification Sequence Listing on:
      i. ☐ CD-ROM (2 copies) or CD-R (2 copies) **or**
      ii. ☐ paper
   c. ☐ Statements verifying identity of above copies.

9. ☐ A copy of any disclaimer, certificate of correction or reexamination certificate issued in the patent is included.

10. ■ Reexamination of claim(s) 8, 10-13, and 15-20 is requested.

11. ■ A copy of every patent or printed publication relied upon is submitted herewith including a listing thereof on Form PTO/SB/08, PTO-1449, or equivalent.

12. ☐ An English language translation of all necessary and pertinent non-English language patents and/or printed publications is attached.

13. ■ The attached detailed request includes at least the following items:
   a. A statement identifying each substantial new question of patentability based on prior patents and printed publications. 37 CFR 1.510(b)(1).
   b. An identification of every claim for which reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited art to every claim for which reexamination is requested. 37 CFR1.510(b)(2).

14. ☐ A proposed amendment is included (only where the patent owner is the requester). 37 CFR 1.510(e).

15. ■ It is certified that the statutory estoppel provisions of 35 U.S.C. 315(e)(1) or 35 U.S.C. 325(e)(1) do not prohibit requester from filing this *ex parte* reexamination request. 37 CFR 1.510(b)(6).

16. Service
   a. ■ It is certified that a copy of this request (if filed by other than the patent owner) has been served in its entirety on the patent owner as provided in 37 CFR 1.33(c).

      The name and address of the party served are:
      MATTINGLY & MALUR, PC
      1800 Diagonal Road, Suite 210
      Alexandria, VA 22314

      Date of Service: December 23, 2020

   OR

   b. ☐ A duplicate copy is enclosed since service on patent owner was not possible. An explanation of the efforts made to serve patent owner **is attached**. See MPEP 2220.

17. Correspondence Address: Direct all communication about the reexamination to:

☒ The address associated with Customer Number: 118925

OR

☐ Firm or Individual Name _____
(at the address identified below)

Address

City	State	Zip

Country

Telephone	Email

18. ☒ The patent is currently the subject of the following concurrent proceeding(s):

a. ☐ Copending reissue Application No. _____

b. ☐ Copending reexamination Control No. _____

c. ☐ Copending Interference No. _____

d. ☒ Copending litigation styled:

Maxell Ltd. v. Apple Inc, No. 5:19-cv-0036-RWS (E.D. Tex.)

In the Matter of Certain Mobile Elec. Devices & Laptop Computers, USITC Inv. No. 337-TA-1215

WARNING : Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

/Jennifer C. Bailey/
Authorized Signature

December 23, 2020
Date

Jennifer C. Bailey
Typed/Printed Name

52,583
Registration No.

☐ For Patent Owner Requester ☒ For Third Party Requester

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re reexamination of: Yoshida.	Confirmation No.: *To Be Assigned*
U.S. Patent No. 10,176,848	Art Unit: *To Be Assigned*
Issue Date: January 8, 2019	Examiner: *To Be Assigned*
Title: RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF	Third Party Requester Docket No. 2638-19.06

REQUEST FOR *EX PARTE* REEXAMINATION OF U.S. PATENT NO. 10,176,848 UNDER 35 U.S.C. § 302 AND 37 C.F.R. § 1.510

Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Requester submits this Request for E*x Parte* Reexamination under 35 U.S.C. § 302 and 37 C.F.R. § 1.510 of U.S. Patent No. 10,176,848 to Yoshida, titled "Recording and Reproducing Apparatus and Method thereof" ("the '848 Patent"). In accordance with 37 C.F.R. § 1.510(b)(4), a copy of the '848 Patent is attached hereto as Exhibit 1001. The '848 Patent is assigned to Maxell, Ltd. ("Maxell") according to United States Patent and Trademark Office ("USPTO") records at the time of this request.

Pursuant to 37 C.F.R. § 1.510, this Request for *Ex Parte* Reexamination includes:

1) A statement pointing out each substantial new question of patentability based on prior art patents and printed publications;

2) An identification of every claim for which reexamination is requested and a detailed explanation of the pertinency and manner of applying the cited prior art to every claim for which reexamination is requested;
3) A copy of every patent or printed publication relied upon or referred to herein, attached as Exhibits 1005 and 1006;
4) A copy of the entire U.S. Patent No. 10,176,848 for which re-examination is requested, including any disclaimer, certificate of correction, or reexamination certificate issued in the patent;
5) A certification that a copy of the request filed has been served in its entirety on the patent owner at the address as provided for in 37 C.F.R. § 1.33(c);
6) A certification that the statutory estoppel provisions of 35 U.S.C. § 315(e)(1) or 35 U. S.C. § 325(e)(1) do not prohibit the Requester from filing the *Ex Parte* Reexamination Request; and
7) The appropriate fee under 37 C.F.R. § 1.20(c).

The Commissioner is authorized to charge any additional fees, or to credit any overpayment, to Deposit Account No. 50-6159.

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LIST OF EXHIBITS

Exhibit 1001	U.S. Patent No. 10,176,848 ("'848 Patent")
Exhibit 1002	'848 Patent File History
Exhibit 1003	Chuck Creusere Declaration ("*Creusere Dec.*")
Exhibit 1004	'368 Patent File History
Exhibit 1005	U.S. Pub. No. 2007/0098303 to Gallagher, et al. ("*Gallagher*")
Exhibit 1006	U.S. Patent Application Pub. 2007/0019083 to Teruyoshi Nakashima ("*Nakashima*")
Exhibit 1007	Apple Complaint
Exhibit 1008	ITC Complaint
Exhibit 1009	Intentionally Left Blank
Exhibit 1010	Intentionally Left Blank
Exhibit 1011	U.S. Patent Application Publication 2005/0063566 Beek et al. ("*Beek*")
Exhibit 1012	Olympus E-510 User Manual
Exhibit 1013	Samsung Plasma Display Manual

I. IDENTIFICATION OF CLAIMS FOR WHICH REEXAMINATION IS REQUESTED

In accordance with 37 C.F.R. §1.510, reexamination of Claims 8, 10–13, and 15–20 of U.S. Patent No. 10,176,848 is requested in view of the following references:

- U.S. Pub. No. 2007/0098303 to Gallagher, et al. ("*Gallagher*") (Ex. 1005)
- U.S. Patent Application Pub. 2007/0019083 to Teruyoshi Nakashima ("*Nakashima*") (Ex. 1006)

Reexamination of Claims 8, 10–13, and 15–20 is requested under 35 U.S.C. 103(a) as being unpatentable over *Gallagher* in view of *Nakashima*.

Pursuant to 37 C.F.R. §1.510, *ex parte* reexamination is available "at any time during the period of enforceability of a patent." U.S. Patent No. 10,176,848 is has not expired and is thus still enforceable.

II. OVERVIEW OF U.S. PATENT NO. 10,176,848

A. Description of the Alleged Invention of the '848 Patent

The '848 Patent generally describes recording image information, identifying an individual in the image information using facial recognition, and reproducing additional image information within which the specific individual appears. *'848 Patent* (Ex. 1001), Abstract, 2:23–36. Although the Challenged Claims are not expressly limited to video processing (and Patent Owner has asserted them against still image processing in the parallel litigation), the detailed embodiments in the '848 Patent focus entirely on video processing. Namely, the '848 Patent teaches a process by which an individual is registered as a very important person ("VIP") using a facial recognition process on an image of said individual, video information is then processed to locate the registered

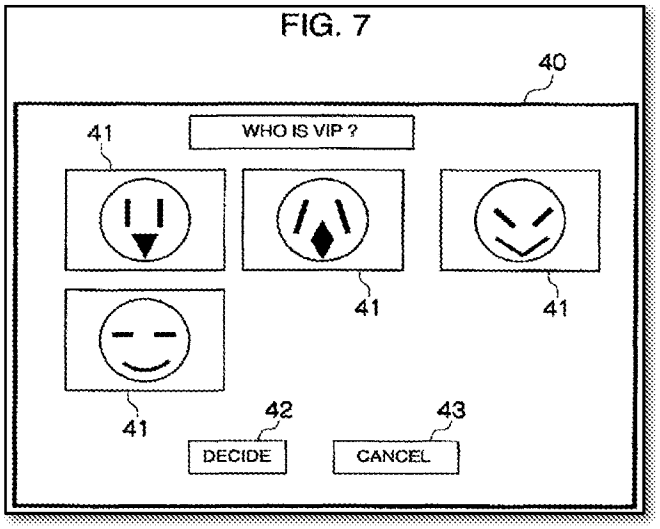
VIP in video scenes, and an importance level is assigned to the video scenes (or chapters) based on the prevalence of the VIP in those scenes. *Id.* at 2:23-56.

Capturing Image Information and Facial Recognition

The '848 Patent describes a video camera that captures an image and converts the analog image signal into a digital image signal using an analog/digital converter. *Id.* at 3:43–4:7. This digital image information is then sent to a compressor/decompressor ("CODEC"), which encodes the digital image information using a predetermined compression encoding method such as MPEG and stores the image information in memory. *Id.* at 4:7–20. The '848 Patent does not describe the details of a facial recognition process, disclosing only that such a process is performed by a "face recognizing execution unit 15." *Id.* at 5:53–64 (noting that "an image capturing the best expression of the person" may be used).

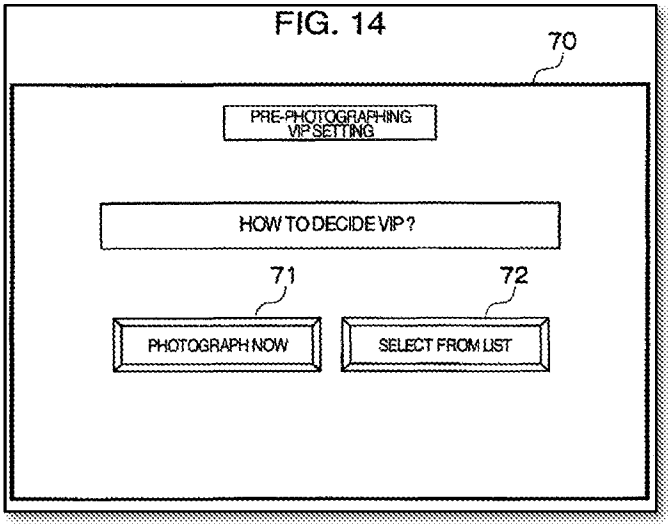
Registering a VIP

The '848 Patent describes two distinct embodiments for registering a VIP and reproducing image information based on the VIP registered. In a first embodiment, a face is registered as a VIP *after* the video has been captured—from the faces recognized in the captured video. As depicted in Fig. 7 below, a "VIP deciding screen 40 displays face images 41 of all persons recognized during photographing the object scene":

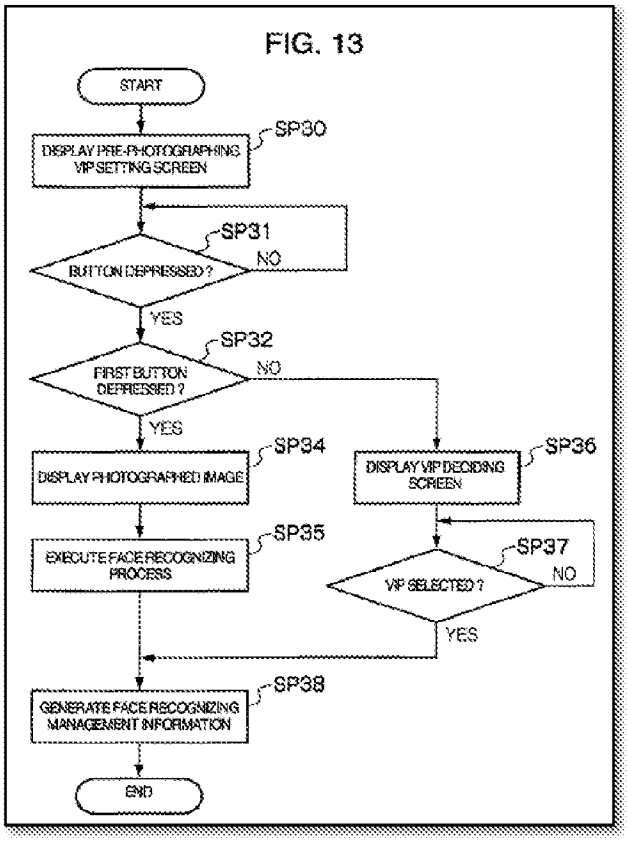


Id. at Fig. 7, 7:53–8:11 (describing the same and noting the "decide" button is used to register a particular VIP from this screen).

The second embodiment allows the user to register a VIP before the video is captured through one of two options—either (1) by taking a new picture (of the VIP) or (2) by selecting from persons previously captured. *Id.* at 12:13–42. These options are illustrated in Fig. 14 below:

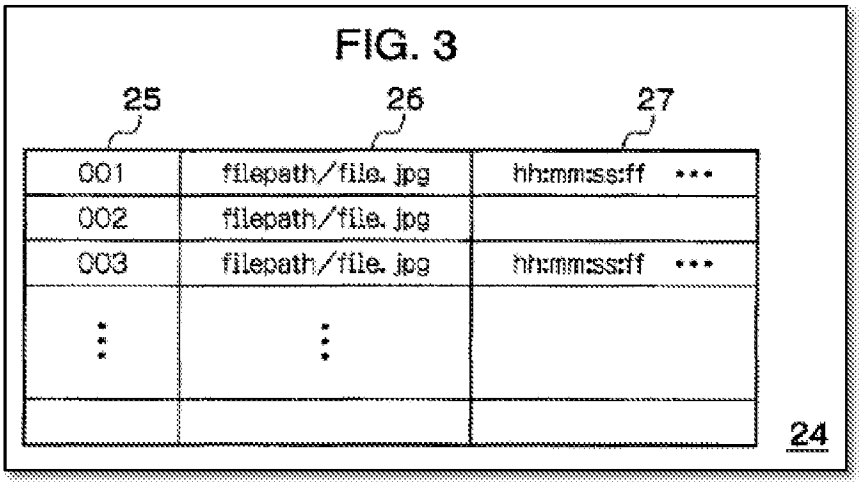


Id. at Fig. 14. Fig. 13 below illustrates the process through which a user registers a VIP before capturing video pursuant to the second embodiment:



Id. at Fig. 13. At SP32, the system asks whether the user has selected to register a VIP using a new photograph or from a list of previously captured individuals (i.e., the choice illustrated in Fig. 14 above). *Id.* at 12:43–46. If the user chooses to use a new photograph, the user takes a picture, which is displayed at SP34 and facial recognition is performed at SP35. *Id.* at 12:47–56. If the user chooses to select from a list, a screen similar to Fig. 7 is displayed and a user may select a previously identified face from the list. *Id.* at 12:63–13:2.

After the VIP has been set (either using a new photo or from a list), the person is registered by forming "face recognizing management information" for that selected individual. *Id.* at 13:2–12 (noting management information is created for *only* the registered VIP). The "face recognizing management information" that is the product of the described registration is depicted in Fig. 3 below:



Id. at Fig. 3. Column 25 contains a unique "face ID" for the registered individual, column 26 is the location of the image file that contains the registered face, and column 27 is the frame position information, which is a listing of all instances of the registered person's face in a recorded video. *Id.* at 5:48–6:7.

Reproducing Image Information

After an individual has been registered as a VIP, a video is divided into "chapters" and each chapter is assigned an "importance level" by determining how prevalent the VIP is in each chapter *Id.* at 7:22–43, 8:16–61 ("[T]he highest chapter importance level of '1' is set to the chapter on which the VIP appears most frequently, and the lowest chapter importance level of '5' is set to the chapter on which the VIP appears least frequently.").

With the video chapters ranked by VIP prevalence, the '848 Patent teaches three distinct reproduction modes—standard, express, and superexpress. *Id.* at 9:20–10:3. The modes allow a user to specify how many chapters are reproduced. *Id.* The standard reproduction mode reproduced all chapters regardless of importance, consuming the most processing resources and taking the longest time. *Id.* Saving time and resources, the express mode reproduces only chapters with an importance higher than a threshold amount (*e.g.*, 3) and the superexpress mode reproduces only

chapters having the highest importance. *Id.*

B. Summary of the Prosecution History of the '848 Patent

The Application that resulted in the '848 Patent was filed on September 5, 2014 and is a continuation of U.S. App. No. 12/430,185, filed on April 27, 2009, which claims priority to Japanese App. No. JP2008-130678, filed on May 19, 2008. *Id.* at 1:6–11. For purposes of this application and without waiving its right to challenge priority in this or any other proceeding, Requester applies May 19, 2008 as the invention date for the Challenged Claims.

The claims that would eventually issue as the Challenged Claims were added by the Applicant on March 31, 2017 and March 20, 2018. File History of U.S. Patent No. 10,176,848 ("*'848 Patent File History*") (Ex. 1002), 292–95, 347–52. Relevant to these claims, prosecution focused on two limitations—(1) registering a person in a first mode using a new image or in a second mode using previously stored image ("the registration limitation") and (2) selectively reproducing images that include the registered person ("the selective reproduction limitation").

Following the introduction of what would issue as the independent Challenged Claims, the Examiner issued an office action, rejecting them as obvious over U.S. Patent Application Pub. 2008/0279425 to Chi Sun Jackson Tang ("*Tang*") in view of U.S. Patent Application Pub. 2007/0019083 to Teruyoshi Nakashima ("*Nakashima*"). *Id.* at 303–322. The Examiner identified teachings in *Nakashima* for the registration limitation and in *Tang* for the selective reproduction limitation. *Id.*

In response, Applicant did not dispute that *Nakashima* teaches the registration limitation. *Id.* at 357–358 (acknowledging *Nakashima's* registration teachings). Instead, Applicant focused on the selective reproduction limitation, arguing that *Tang* does not disclose selectively reproducing images that contain a registered person. *Id.* at 354–356. Namely, Applicant argued that *Tang's* disclosed process of selectively reproducing images provides the user a video sequence

of frames that contain faces of individuals who ***have not*** been previously registered. *Id.* at 355 (discussing *Tang's* key frame match mode, which plays back "only key frames which contain new or different face features"). In other words, according to Applicant, *Tang's* selective reproduction teaching is the opposite of that required by the selective reproduction limitation, displaying frames containing new and previously unidentified faces, rather than the frames containing the registered person.

A Notice of Allowance issued on July 13, 2018. *Id.* at 366–374.[1]

C. Level of Skill in the Art

A person having ordinary skill in the art ("PHOSITA") at the time of the '848 Patent would have had at least a bachelor's degree in electrical engineering, computer engineering, computer science, or a related field, with at least one year of experience in the field of image processing. Additional education or experience might substitute for the above requirements. *Creusere Dec. (Ex. 1003), ¶¶ 26-28.*

III. NOTIFICATION OF CONCURRENT PROCEEDINGS PURSUANT TO 37 C.F.R. § 1.565

The '848 Patent is currently the subject of pending district court litigation: *Maxell Ltd. v. Apple Inc*, No. 6:20-cv-00646 (W.D. Tex.) (the "*Apple Litigation*"). *Apple Litigation*, Dkt. No. 1 (Ex. 1007) ("*Complaint*"). The Requester is a Defendant in the litigation. In view of this concurrent Litigation, it is respectfully urged that this Request be granted and reexamination be conducted not only with "special dispatch," but also with "priority over all other cases" in accordance with M.P.E.P. § 2261.

[1] Prior to issuance, Applicant filed an RCE and submitted new references in an IDS. *Id.* at 413–417. A second Notice of Allowance followed on November 1, 2018.

Requester notes that trial in the Litigation is currently unscheduled. Therefore, there is currently no federal court decision affecting this reexamination. A final holding of claim invalidity or unenforceability (after all appeals) will likely not occur prior to a determination on the request for reexamination is made. Requester reminds the Office of M.P.E.P. § 2286(II) and treatment of federal court decisions, namely that "[a] *non-final* federal court decision concerning a patent under reexamination shall have no binding effect on a reexamination proceeding." (M.P.E.P. § 2286(IV)) (emphasis in original).

The '848 Patent is also currently the subject of pending litigation at the International Trade Commission: *In the Matter of Certain Mobile Elec. Devices & Laptop Computers*, USITC Inv. No. 337-TA-1215. *ITC Complaint* (Ex. 1008). The Requester is a Respondent in the investigation.

Requester has concurrently filed a petition for *Inter Partes* Review of the '848 Patent (IPR2021-00367) that mirrors the grounds proposed herein. To avoid duplicating efforts, Requester proposes the Patent Office stay this reexamination proceeding pursuant to 37 C.F.R. § 1.565 in the event the Board institutes the IPR.

IV. RELATED REEXAMINATION PROCEEDINGS

Requester is not aware of any existing reexamination proceedings related to the '848 Patent or any patent related to the '848 Patent.

V. STATEMENT POINTING OUT EACH SUBSTANTIAL NEW QUESTION OF PATENTABILITY

Requester respectfully submits that a substantial new question of patentability exists under 35 U.S.C. § 103 with respect to Claims 8, 10–13, and 15–20 based on *Gallagher* in view of *Nakashima*.

A. *Gallagher* is Analogous Prior Art

Gallagher published on May 3, 2007, and therefore qualifies as prior art to the '848 Patent under at least 35 U.S.C. § 102(b) (Pre-AIA). *Gallagher* was not cited or considered during prosecution.

Gallagher teaches a method of registering a VIP face from a captured photo, identifying facial features of the VIP through facial recognition, storing those features, and selectively reproducing images and videos containing the registered VIP. *Gallagher* (Ex. 1005), Abstract (describing "[a] method of identifying a particular person in a digital image collection, . . . providing at least one first label for a first image . . . [that] identifies [a] particular person . . ., determining features related to the particular person from the first image . . ., and using such particular features to identify another image in the digital image collection believed to contain the particular person.").

Specifically, *Gallagher* teaches that a user can register a person of interest (e.g., a VIP) by using labeler 104, which allows the user to indicate "the name of a person of interest," an "identifier associated with the person of interest," and/or "the location of the person of interest within the image or video," and also allows the user to request that the system "search for images or videos from the image collection believed to contain the person of interest." *Id.* at [0049]-[0054]. At step 208, "the person identifier . . . determines a digital image collection subset 112 of images and videos believed to contain the person of interest," which are displayed to the user at step 210. *Id.* at [0059]. The user can provide feedback regarding the accuracy of the generated subset at steps 212 and 214. Id.

Because *Gallagher*, like the '848 Patent, is directed to performing facial recognition on a photo and registering a detected face for further processing, Gallagher is in the same field of endeavor as the '848 Patent. *Compare Gallagher* (Ex. 1005), Abstract ("A method of identifying

a particular person in a digital image collection . . . determining features related to the particular person from the first image or second image or both; and using such particular features to identify another image in the digital image collection believed to contain the particular person.") with *'848 Patent* (Ex. 1001), 2:41-52 ("a recording and reproducing method . . . comprising: a first step of executing a face recognizing process for a photographed image based on the image information; a second step of setting an importance level of each chapter in accordance with a result of the face recognizing process for a VIP set by a user; and a third step of selectively reproducing each chapter having a relevant importance level, among importance levels of respective chapters."). *Gallagher* is therefore analogous art to the '848 Patent. *Creusere Dec.* (Ex. 1003), ¶¶ 38-44.

B. *Nakashima* is Analogous Prior Art

Nakashima published on January 25, 2007 and qualifies as prior art to the '848 Patent under at least 35 U.S.C. § 102(b) (Pre-AIA). As set forth above in Section II.B, the Examiner relied on *Nakashima* teachings for its registration teachings, which the Applicant did not dispute. The proposed ground herein relies on *Nakashima* for these same concepts. Because the base reference, *Gallagher*, was not considered during prosecution and is not cumulative to any art before the Examiner during prosecution, Petitioner's reliance on *Nakashima* in combination with *Gallagher* does not present the same or substantially the same prior art or arguments previously presented. Indeed, as described above and as set forth in detail below, *Gallagher* teaches precisely the selective reproduction allegedly missing from the art of record during prosecution and which resulted in the Challenged Claims' issuance.

Nakashima teaches that registering facial images may be performed by "individually photographing the face of [a] subject" or by using a previously stored photo (e.g., stored on "HDD 75" or "an external server"). *Id.* at [0123], *see also id.* at [0147] (noting "[f]acial images to be stored in the basic information registration table . . . do not necessarily have to be images obtained"

from the camera, but may instead be "received from an external server via the communication port 107 or read out from the memory card 200").

Because *Nakashima*, like the '848 Patent, is directed to performing facial recognition on a photo and registering a detected face for further processing, *Nakashima* is in the same field of endeavor as the '848 Patent. *Compare Nakashima* (Ex. 1006), Abstract (describing a facial recognition process on captured photos, a registration process that stored recognized faces with identifying information, and a an identification process that quantifies stored photos that contain a registered face) *with '848 Patent* (Ex. 1001), 2:41-52 ("a recording and reproducing method . . . comprising: a first step of executing a face recognizing process for a photographed image based on the image information; a second step of setting an importance level of each chapter in accordance with a result of the face recognizing process for a VIP set by a user; and a third step of selectively reproducing each chapter having a relevant importance level, among importance levels of respective chapters."). *Nakashima* is therefore analogous art to the '848 Patent. *Creusere Dec.* (Ex. 1003), ¶¶ 45-48.

C. The Proposed Combination of *Gallagher* and *Nakashima*

As discussed above, *Gallagher* teaches that a user can register a person of interest (e.g., a VIP) by using labeler 104, which allows the user to indicate "the name of a person of interest," an "identifier associated with the person of interest," and/or "the location of the person of interest within the image or video," and also allows the user to request that the system "search for images or videos from the image collection believed to contain the person of interest." *Gallagher* (Ex. 1005), [0049]-[0054]. When describing this VIP registration process, *Gallagher* expressly teaches that a user may select an image from the existing digital image collection, but does not expressly contemplate allowing a user to register a VIP using a newly captured photo as required by the

Challenged Claims. *See, e.g., id.* at [0049] (noting images from the "digital image collection 102 are displayed" for the user to label).

It was, however, known in the art to provide users the option of taking a new photo or using a preexisting photo when registering an individual's face. For example, *Nakashima* teaches that registering facial images may be performed by newly "photographing the face of [a] subject" or by using a previously stored photo (e.g., stored on "HDD 75" or "an external server"). *Nakashima* (Ex. 1006), [0123], *see also id.* at [0147] (noting "[f]acial images to be stored in the basic information registration table . . . do not necessarily have to be images obtained" from the camera, but may instead be "received from an external server via the communication port 107 or read out from the memory card 200"). For a number of reasons, it would have been obvious to supplement *Gallagher's* process by allowing users to register a VIP using either a new photo or a pre-stored photo pursuant to the teachings of *Nakashima*.

First, adding a new photo registration option to *Gallagher* would benefit its process in the same manner that it benefits *Nakashima's*—ensuring the user is able to register a VIP with a photo that accurately captures the VIP's facial features. *Creusere Dec.* (Ex. 1003), ¶¶ 49-54. *Nakashima* teaches that new photos taken to register an individual should be "photographed at clear and appropriate sizes to allow detection of the facial regions by the face detection section." *Nakashima* (Ex. 1006), [0145]. Although *Nakashima* also permits a user to register an individual using a pre-stored photo, it warns that such photos may be used only if "photographed at an appropriate size and with appropriate clarity." *Id.* at [0147]. Indeed, *Gallagher* explains that its stored facial features for a registered VIP attempt to capture details such as those illustrated in the following Fig. 12D:

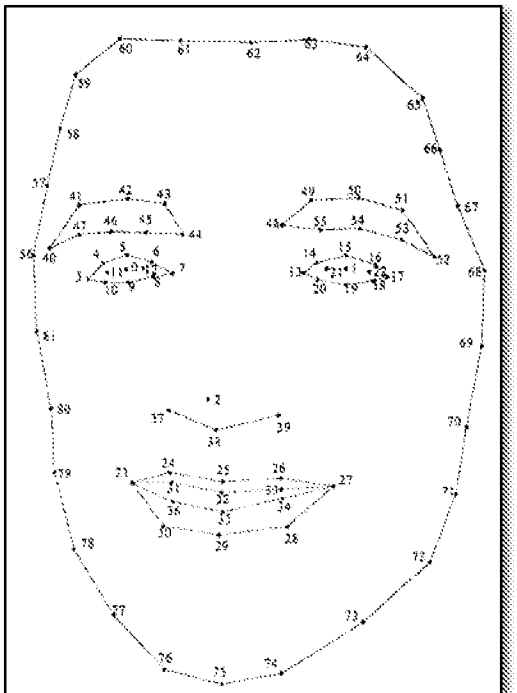


FIG. 12D

Gallagher (Ex. 1005), Fig. 12D, [0082] (describing the same). A PHOSITA would have recognized that allowing a user of *Gallagher's* system to register a VIP's face using a new photograph that provides a clear and appropriately sized view of the VIP's face (as taught by *Nakashima*) would have improved *Gallagher's* system by ensuring that the facial features depicted above are accurately captured. *Creusere Dec.* (Ex. 1003), ¶¶ 51-52 (explaining that a PHOSITA would have understood *Gallagher's* native process of registering VIPs with existing photos suffers from the likely scenario in which no existing photo of the VIP includes a clear and appropriately sized view of the VIP's face, preventing the detail depicted in Fig. 12D from being created for the VIP); *see also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) (obvious to use known techniques to improve similar devices in the same way).

Second, such a modification to *Gallagher* would have been straightforward, requiring only minor changes such as reprogramming *Gallagher's* system to permit capturing a new photo of a VIP as part of the registration process. *Creusere Dec.* (Ex. 1003), ¶ 53 (describing the proposed

modification and concluding that such modifications would have been well within the capabilities of PHOSITA); *see also KSR*, 550 U.S. at 416 (obvious to combine prior art elements according to known methods to yield predictable results). Indeed, *Gallagher* already has the photo capturing infrastructure necessary to accommodate this change. *Creusere Dec.* (Ex. 1003), ¶ 53 (discussing *Gallagher* (Ex. 1005), [0036-0041], which describes *Gallagher's* digital imaging hardware).

VI. CLAIM CONSTRUCTION

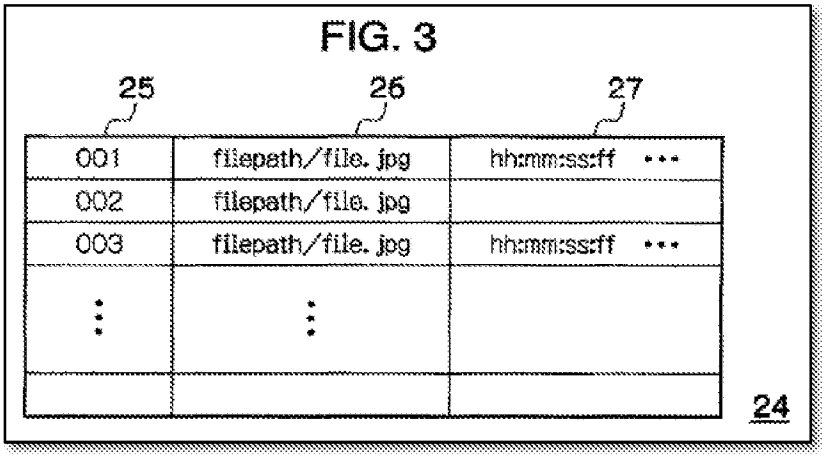
A. Legal Standard

For the purposes of this Request, the claim terms are presented by the Requester in accordance with 37 C.F.R. § 1.555(b) and M.P.E.P. § 2111. Specifically, the claim terms herein are "given the broadest reasonable interpretation consistent with the specification." M.P.E.P. § 2258 (I)(G); *see also In re Yamamoto*, 740 F.2d 1569, 1572 (Fed. Cir. 1984). The broadest reasonable interpretation must also be consistent with the interpretation that those skilled in the art would reach. *In re Cortright*, 165 F.3d 1353, 1359 (Fed. Cir. 1999). Thus, the inquiry regarding the meaning of a claim should focus on what would be reasonable from the perspective of one of ordinary skill in the art. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010). Requester proposes the two claim terms addressed below should be ascribed specific meaning under the applicable standard.

"Register"

Claims 8, 13, and 18 recite a processor/processing circuitry configured to "register a person in the image information as a specific person" such that image information including the registered person can be selectively reproduced. The "face recognizing management information" is the key data structure that reflects the registration and selective reproduction processes. Depicted below, it includes three columns—a unique ID (25) assigned to each registered person, a file path (26) to

a template image of the registered person's face, and frame position information (27) that identifies all instances of the registered person in an analyzed video:



Id. at Fig. 3, 5:53-6:7 (describing the same). Often described in the '848 Patent as "VIP setting," registration is the process by which the first two columns in the "face recognizing management information" are created—connecting a unique ID for a person with that person's captured face, which is used as a template or reference facial image. *See, e.g., '848 Patent* (Ex. 1001), 12:53-62 (describing a first mode in which registration uses a newly captured image, noting the VIP setting process completes after "the face recognizing management information" is formed and stored), 13:1-12 (describing a process by which existing image information is used to register a VIP, noting "the face recognizing execution unit 15 is instructed to form the face recognizing management information 24 illustrated in FIG. 3 registering only information on the selected VIP[.]").

Contrasting the described registration process with a prior art teaching during prosecution of the '848 Patent's parent (U.S. Patent No. 9,159,368), the applicant stressed that the registration process sets a "reference face image" so that the registered person can be identified in other image information:

> **Applicant's invention is characterized** (at least in part**) in that the user can set a specific person by selecting a face image corresponding to the specific person** from a displayed list of face images, which have been captured and registered in

> advance in a person registering mode. **Since the appropriate reference face image of the person is registered, the person identification accuracy is improved**. As a result, a user can view the video image including the face image of the specific person more quickly.

'368 Patent File History (Ex. 1004), 279 (emphasis added).

In light of these pertinent disclosures, Requester proposes construing "register a person in the image information as a specific person" as "identify and record a portion of an image as being the reference face image of a specific person."

First setting mode

Describing the process in which a new photograph is used to register a person whose face has not previously been captured by the system, claims 8, 13, and 18 recite, "[when the first setting mode is set,] a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person." This mode is described in the '848 Patent's "second embodiment." *'848 Patent (Ex. 1001),* 12:33–62 (describing a first setting mode in which a VIP is newly photographed, distinguishing this mode from the second setting mode in which a VIP is decided from "among persons recognized during photographing already performed"). As described above, the registration process sets a person's face found in image information as a reference or template image that the system uses to identify other instances of the registered person in, for example, a captured video. Applying the above construction for the registration process, Requester proposes construing "[when the first setting mode is set,] a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person" as "[when the first setting mode is set,] the image of a person's face is obtained by newly photographing the person and the resulting image information is recorded, as the image is saved, as being the reference face image of a specific person."

VII. DETAILED EXPLANATION UNDER 37 CFR 1.510(B)(2)

In accordance with M.P.E.P. § 2258(I)(E), Requester submits herewith the Declaration of Charles D. Creusere (Ex. 1003) providing further explanation of the contents of the prior art, as referenced below.

A. SNQP1: *Gallagher* in View of *Nakashima* Renders Obvious Claims 8, 10–13, and 15–20

Gallagher in view of *Nakashima* raises a substantial new question of patentability as to whether claims 8, 10–13, and 15–20 are unpatentable as being obvious under 35 U.S.C. § 103. As explained above, the Examiner did not cite to or otherwise rely on *Gallagher* during prosecution.

The description below establishes that *Gallagher* in view of *Nakashima* discloses every claim element in claims 8, 10–13, and 15–20. The information presented in this *ex parte* request embodies new and noncumulative teachings that the USPTO has not previously applied to the Requested Claims, and thus *Gallagher* in view of *Nakashima* raises a substantial new question of patentability.

1. Claim 8

a) 8(P) "A recording and reproducing apparatus for recording and reproducing image information, comprising:"

To the extent the preamble is limiting, *Gallagher* teaches a recording apparatus and reproducing image information on a display. *Id.* at [0007]–[0011] ("It is an object of the present invention to readily identify objects or persons of interest in images or videos in a digital image collection."). Figure 1 of *Gallagher* shows a digital camera phone that implements the described invention:

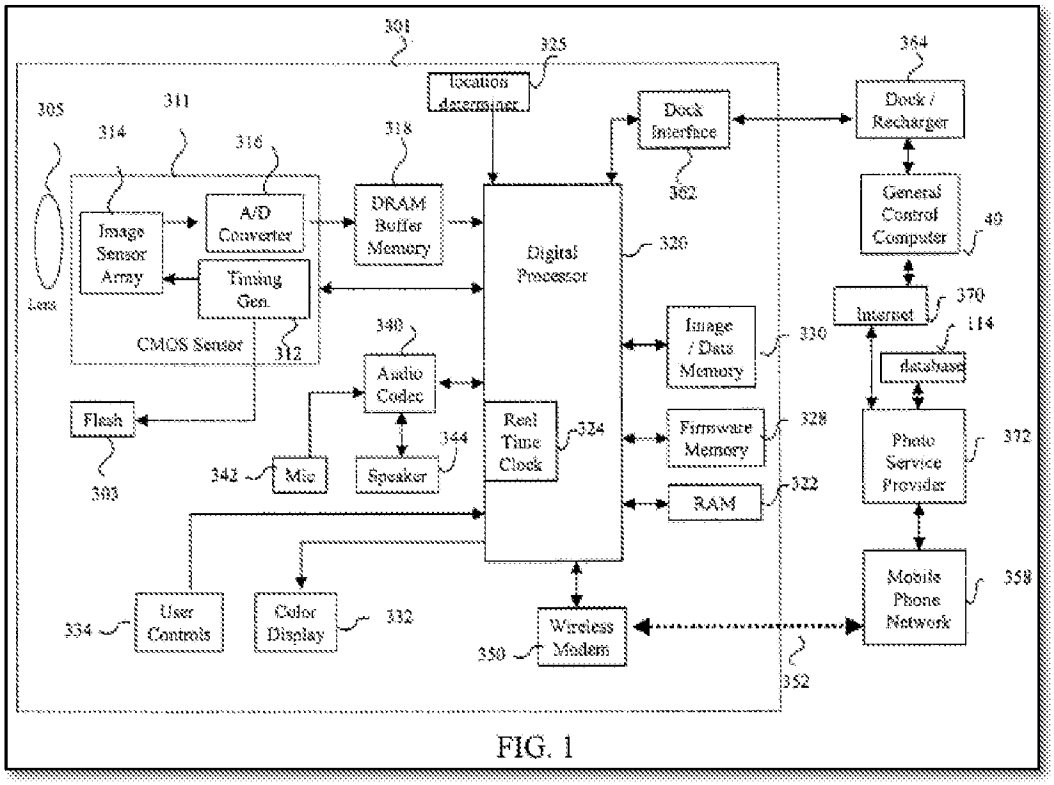


FIG. 1

Id. at Fig. 1; *see also id.* at [0036] ("Preferably, the digital camera phone 301 is a portable battery operated device, small enough to be easily handheld by a user when capturing and reviewing images."). *Gallagher* also discloses reproducing those images for a user to view. *See id.* at [0049] ("Images or videos of the digital image collection 102 are displayed on the display 332 and viewed by the user.").

b) 8(a) "a processor; and"

Gallagher discloses a processor:

> *The digital data is stored in a DRAM buffer memory 318 and subsequently* ***processed by a digital processor 320 controlled by the firmware stored in firmware memory 328****, which can be flash EPROM memory.* ***The digital processor 320 includes a real-time clock 324, which keeps the date and time even when the digital camera phone 301 and digital processor 320 are in their low power state.***

Id. at [0039]. The processor is annotated (in red) below:

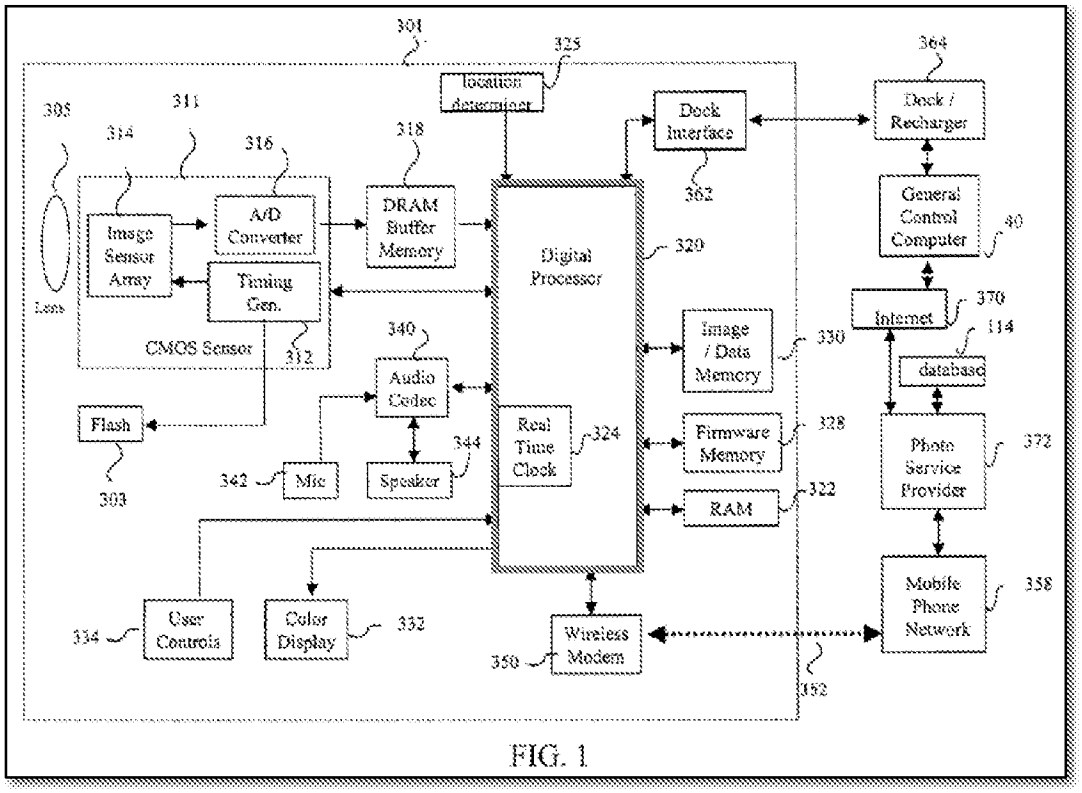


FIG. 1

Id. at Fig. 1 (annotated to show processor in red).

c) 8(b) "a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:"

Gallagher teaches a memory coupled to the digital processor, which contains firmware that controls the processor and processes the digital data stored in buffer memory. Specifically, *Gallagher* teaches that "digital data is stored in a DRAM buffer memory 318 and subsequently processed by a digital processor 320 **controlled by the firmware stored in firmware memory 328**, which can be flash EPROM memory." *Id.* at [0039] (emphasis added).

d) 8(c) "capture a photograph and generate image information of the photograph;"

Gallagher teaches capturing analog signals using an image sensor array 314. *Id.* at [0037] ("The digital camera phone 301 includes a lens 305 that that focuses light from a scene . . . onto an image sensor array 314 of a CMOS image sensor 311."). These analog image signals are

converted to digital using an A/D converter and are stored in memory. *Id.* at [0039] ("The analog output signals from the image sensor array 314 are amplified and converted to digital data by the analog-to-digital (A/D) converter circuit 316 on the CMOS image sensor 311.").

While *Gallagher* does not expressly discuss its digital processor executing instructions that cause the CMOS image sensor to capture a photograph and store image data in memory, a PHOSITA would have understood that the digital processor would have done so. *Creusere Dec.* (Ex. 1003), ¶¶ 54-56. Indeed, Figure 1 depicts a bidirectional connection between the CMOS sensor (311) and the Digital Processor (320). *Id.* (discussing *Gallagher's* Fig. 1 and concluding digital processor 320 would have controlled the operations of CMOS sensor 311 through this control line, including by instructing the sensor to capture and digitize image for storage in memory). Furthermore, *Gallagher* explicitly teaches that the digital camera phone as a whole "controlled by the firmware stored in firmware memory 328." *Gallagher* (Ex. 1005), [0036]-[0040]. Because there are no other controllers or processors depicted within the device, a PHOSITA would have concluded that digital processor 320, executing its firmware, is responsible for initiating all functions ascribed to the device. *Creusere Dec.* (Ex. 1003), ¶¶ 54-56.

e) 8(d) "record the image information in a recording medium;"

Gallagher teaches recording the image information in a recording medium. For example, *Gallagher* discloses storing digital data in a buffer memory 318 before it is passed on to digital processor 320 for additional processing, and ultimately stored in image/data memory 330:

> The analog output signals from the image sensor array 314 are amplified and converted to digital data by the analog-to-digital (A/D) converter circuit 316 on the CMOS image sensor 311. **The digital data is stored in a DRAM buffer memory 318 and subsequently processed by a digital processor 320 controlled by the firmware stored in firmware memory 328, which can be flash EPROM memory**. The digital processor 320 includes a real-time clock 324, which keeps the date and time even when the digital camera phone 301 and digital processor 320 are in their low power state.

> **The processed digital image files are stored in the image/data memory 330. The image/data memory 330** can also be used to store the user's personal calendar information, as will be described later in reference to FIG. 11. The image/data memory can also store other types of data, Such as phone numbers, to-do lists, and the like.

Gallagher (Ex. 1005), [0039]–[0040]. As set forth regarding the prior limitation, a PHOSITA would have understood that the digital processor executing its firmware controls this process. *Creusere Dec.* (Ex. 1003), ¶¶ 54-56.

f) 8(e) "execute a face-recognizing process on the image information to recognize a face;"

Gallagher teaches instructions stored in memory that cause the processor to execute a face-recognizing process on the image information in order to recognize a face in the image. For example, *Gallagher* describes utilizing a person detector, which includes a face detector, to detect faces in images. *Gallagher* (Ex. 1005), [0075] ("The images and videos of the digital image collection 102 are analyzed by a face detector 270"), Fig. 12A (block diagram of person detector, including face detector 270). *Gallagher* expressly notes that face recognition functionality known in the art is software-based, providing examples of "image processing packages" such as "FaceVACS face recognition **software** from Cognitec Systems GmbH and the Facial Recognition SDKs from Imagis Technologies Inc. and Identix Inc." *Id.* at [0006]. Accordingly, a PHOSITA would have understood that *Gallagher's* face-recognizing process is similarly a software-based process governed by digital processor 320 executing instructions. *Creusere Dec.* (Ex. 1003), ¶¶ 57-58.

g) 8(f) "reproduce the recorded image from the recording medium;"

Gallagher teaches displaying the digital images to the user (*i.e.*, reproducing the recorded images). *Gallagher* (Ex. 1005), [0043]; *see also id.* at [0048] ("The digital image collection subset

112 is displayed on the display 332 for review by the human user."). As set forth above, Gallagher teaches that the processed "digital image files are stored in the image/data memory 330." *Id.* at [0040]. A PHOSITA would have understood that the displayed images are reproduced from the stored images in memory. *Creusere Dec.* (Ex. 1003), ¶ 59. Furthermore, as with the prior limitations, a PHOSITA would have understood that the photo reproduction process is governed by digital processor 320 executing instructions. *Id.*

h) 8(g) "register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode,"

As set forth above in Section VI, "register a person in the image information as a specific person" should be construed as "identify and record a portion of an image as being the reference face image of a specific person." In other words, the claimed registration is a process by which a reference or template face is associated with an individual so the system can use the reference/template to identify additional image information containing the individual.

Gallagher teaches setting a person's face as a reference face image that is then used to identify images containing that person. Specifically, *Gallagher* teaches a person detector that allows a user to "label" a person's face (e.g., with that person's name) and uses that template face to identify the person in other image data:

> When the person detector 110 detects a person, the position of the person can be highlighted to the user by, for example, circling the face on the display 332. Then the **user can provide the name or identifier for the highlighted person, thereby associating the position of the person with the user provided label**. When more than one person is detected in an image, the positions of the persons can be highlighted in turn and labels can be provided by the user for any of the people.

Gallagher (Ex. 1005), [0053] (emphasis added); *see also id.* at [0007] ("It is an object of the present invention to readily identify objects or persons of interests [sic] in images or videos in a digital image collection."), [0064] (describing "a search for a person of interest" in which "[t]he

person of interest is the name of a person that has been used as a label when labeling people in selected images" and in which the system uses "the features from the features extractor 106 and associated labels stored in the database 114 and determines the digital image collection subset 112 of images and videos believed to contain the person of interest").

As discussed above in the Motivation to Combine section, *Gallagher* expressly teaches the claimed "second setting mode" in which a person's face is registered using image information previously stored in memory, but *Gallagher* does not expressly contemplate allowing users to register a person's face using a newly captured image, as required by the claimed "first setting mode." *See* pp. 11-14, *supra*. As also discussed at length above, however, it would have been obvious to supplement *Gallagher's* process by allowing users to register a VIP using either a new photo or a pre-stored photo pursuant to the teachings of *Nakashima*. *Id.*

As with the functionalities discussed above, a PHOSITA would have understood that the registration modes in *Gallagher* (as modified pursuant to *Nakashima*) are governed by digital processor 320 executing instructions. *Creusere Dec.* (Ex. 1003), ¶ 59.

i) 8(h) "wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and,"

As set forth above in Section VI, "[when the first setting mode is set,] a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person" should be construed as "[when the first setting mode is set,] the image of a person's face is obtained by newly photographing the person and the resulting image information is recorded, as the image is saved, as being the reference face image of a specific person." In other words, the claimed first setting mode allows the user to take a new photo of a person's face, rather than use an existing photo from memory.

Nakashima teaches that registering facial images may be performed by "individually photographing the face of [a] subject." *Id.* at [0123]. *Nakashima* cautions that new photos taken to register an individual should be "photographed at clear and appropriate sizes to allow detection of the facial regions by the face detection section." *Nakashima* (Ex. 1006), [0145]. Although *Nakashima* also permits a user to register an individual using a pre-stored photo, it warns that such photos may be used only if "photographed at an appropriate size and with appropriate clarity." *Id.* at [0147]. Indeed, *Gallagher* explains that its stored facial features for a registered VIP attempt to capture details such as those illustrated in the following Fig. 12D:

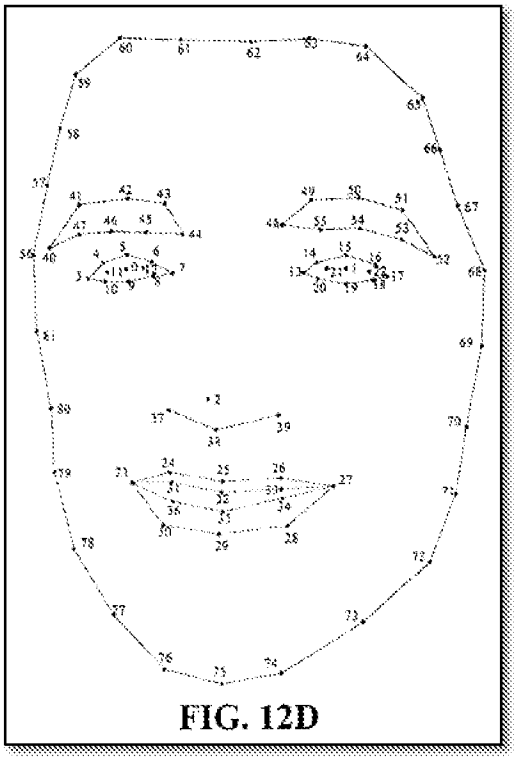


FIG. 12D

Gallagher (Ex. 1005), Fig. 12D, [0082] (describing the same).

Like *Gallagher's* database 114 that stores extracted facial features with a label indicative of a person's identity, *Nakashima* teaches creating a registration table that links the template face with a person's identity:

> [A] basic information registration table 75a is stored in the hard disk 75. **The** basic information **registration table** 75a **relates "registration facial images"**, which are images to be used as criteria for identifying the face of each individual subject, **to "subject IDs", which are identification information assigned to each individual subject**. The "registration facial images" and "subject IDs" are further related to "names" of individuals.

Nakashima (Ex. 1006), [0122] (emphasis added).

j) 8(i) "when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person; and"

Gallagher teaches registering a face using stored digital images, utilizing a "labeler." *Gallagher* (Ex. 1005), [0049]–[0050]. *Gallagher* even accommodates registering one face from an image that contains multiple individuals, noting the user may indicate the location of a person of interest (*e.g.*, by clicking on their eyes), and the person detector will then highlight the person of interest by circling their face (*i.e.*, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium). *See id.* at [0053] ("Preferably, the location of the person of interest is specified by the coordinates (e.g. the pixel address of row and column) of the eyes of the person of interest (and the associated frame number in the case of video).").

Gallagher also teaches that after the user has identified the location of a person of interest in the digital image, the user may then label (*e.g.*, provide a name or identification) for the person of interest (*i.e.*, thereafter registered as the specific person). *Id.* at [0074] ("The person detector 110 can be a manual operation where a user inputs the position of people in images and videos by outlining the people, indicating eye position, or the like."). A "feature extractor" extracts a registered user's facial features from the image and those features are stored in database 114 along with the user-assigned label (e.g., the registered person's name):

> Images or videos of the digital image collection 102 are displayed on the display 332 and viewed by the user. The user establishes one or more labels for one or more of the images with a labeler 104. **A feature extractor 106 extracts features** from the digital image collection in association with the label(s) from the labeler 104. **The features are stored in association with labels in a database 114**.

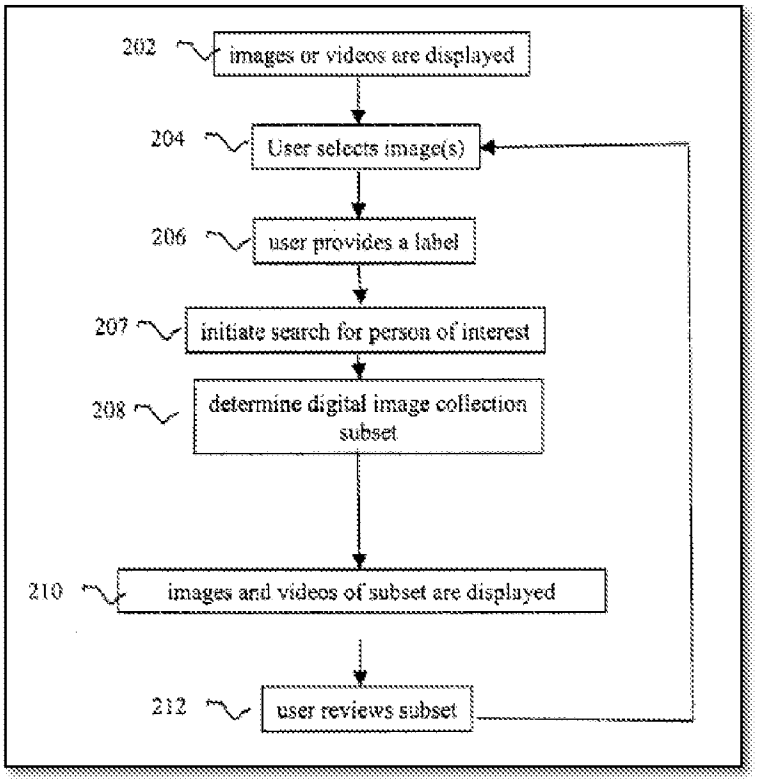
Id. at [0049] (emphasis added); *see also id.* at [0050]–[0051] ("A label from the labeler 104 indicates that a particular image or video contains a person of interest and [may] include[] . . . the name of a person of interest"); [0066], [0082]–[0126] (describing the process of extracting "local features" that represent a registered person's "specific facial features").

k) 8(j) "selectively reproduce the recorded image information which includes the registered specific person."

Gallagher describes a "person finder" that searches stored digital images and returns a subset of images containing a registered person of interest:

> An embodiment of the invention is illustrated in FIG. 2. **A digital image collection 102 containing people is searched for a person of interest by a person finder 108. A digital image collection subset 112 is the set of images from the digital image collection 102 believed to contain the person of interest**. The digital image collection 102 includes both images and videos. For convenience, the term "image' refers to both single images and videos. . . . **The digital image collection subset 112 is displayed on the display 332 for review by the human user**.
>
> . . .
>
> **When the digital image collection subset 112 is displayed on the display 332, the user can review the results** and further label the displayed images.

Gallagher (Ex. 1005), [0048]–[0049]. Figure 7 below depicts the process by which a user registers a person (steps 202–206), the system generates a subset of images believed to contain the registered person (steps 207–210):



Id. at Fig. 7. *Gallagher* explains that the extracted facial features stored during the registration process are used to identify the registered person in other image data:

> In block 208, the person identifier accesses the features from the features extractor 106 and associated labels stored in the database 114 and determines the digital image collection subset 112 of images and videos believed to contain the person of interest.

Id. at [0064].

Gallagher recognizes that reproducing a subset of images containing a particular registered person is necessarily an imperfect exercise and allows the user to customize the process. Namely, *Gallagher* describes a "T_0" value, between 0 and 1.0, representing the probability that the person of interest appears in an image. *Id.* at [0138] ("The digital image collection subset 112 is the collection of images and videos having an associated proposed label with a probability that exceeds a threshold T_0, where To ranges from $0 <= T_0 <= 1.0$. . . . The images and videos of the digital image

collection subset are sorted so that images and videos determined to have the highest belief of containing the person of interest appear at the top of the subset, following only the images and videos with features having labels matching the identity of the person of interest 252."). The T_0 value is adjustable such that a higher the T_0 value increases the confidence that the registered VIP appears in a given image, resulting in fewer images included in the subset. *Id.* at [0146]. Conversely, a lower T_0 value decreases the confidence that the registered VIP appears in a given image, resulting in more images included in the produced subset. *Id.*

As with the image reproduction limitation [8(f)], a PHOSITA would have understood that this selective reproduction process, including the details of the selective reproduction processes mapped to the dependent claims below, is governed by digital processor 320 executing instructions. *Creusere Dec.* (Ex. 1003), ¶ 59.

2. Claim 10

a) 10. The recording and reproducing apparatus according to claim 8, wherein the image information to be selectively reproduced is the image information having a relatively high importance level picked out among the image information recorded in the recording medium which includes the registered specific person.

The '848 Patent's importance level is limited. Once a VIP is selected, the system analyzes video divided into chapters and determines how frequently the VIP appears in each chapter. *'848 Patent* (Ex. 1001), 8:24–53 (explaining that "the number of appearance frequencies of the VIP . . . is counted for each chapter of the object scene" and that an importance level is assigned each chapter such that "the highest chapter importance level of '1' is set to the chapter on which the VIP appears most frequently, and the lowest chapter importance level of '5' is set to the chapter on which the VIP appears least frequently"). The chapters may then be selectively reproduced in accordance with the assigned importance levels. *Id.* at 8:66–9:54 (describing (1) a "standard reproducing mode" in which "chapters having the chapter importance level '5' or smaller (. . . i.e.,

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all chapters) are reproduced," (2) an "express reproducing mode" in which "chapters having the chapter importance level '3' or smaller . . . are reproduced," and (3) a "super express reproducing mode" in which "only the chapters having the chapter importance level '1' are reproduced"). In other words, a user can choose to see only chapters with a high prevalence of the VIP (resulting in fewer chapters reproduced overall), may choose to see all chapters containing the VIP even if the VIP is infrequently depicted, or an option in between. This chapter-based and *quantitative* process is the sole disclosure that addresses importance levels. The '848 Patent does not describe an importance level embodiment for still image reproduction and it does not teach any means by which image data containing a registered VIP may be deemed *qualitatively* more important than any other image data containing that same VIP. *See Creusere Dec.* (Ex. 1003), ¶ 30 (noting that the '848 Patent's detailed disclosures focus entirely on video processing despite the fact that Patent Owner has asserted the Challenged Claims against still image processing).

Like the quantitative importance level disclosure in the '848 Patent, *Gallagher* teaches an adjustable T_0 value that determines which images identified as containing a registered VIP will be selectively reproduced and sorts the reproduced images in accordance with the qualitative closeness of their match to the stored template face:

> **The digital image collection subset 112 is the collection of images and videos having an associated proposed label with a probability that exceeds a threshold To, where To ranges from $0<=T_0<=1.0$**. Preferably, the digital image collection Subset 112 also contains the image and videos associated with features having labels matching the identity of the person of interest 252. **The images and videos of the digital image collection subset are sorted so that images and videos determined to have the highest belief of containing the person of interest appear at the top of the subset, following only the images and videos with features having labels matching the identity of the person of interest 252**.

Gallagher (Ex. 1005), [0138]. The T_0 value is adjustable such that a higher the T value increases the confidence that the registered VIP appears in a given image, resulting in fewer images included

in the subset. *Id.* at [0146]. Like the "super express reproducing mode" described by the '848 Patent, setting a high T_0 value in *Gallagher* quantitatively limits the number of reproduced images containing the registered VIP.

Beyond the '848 Patent's quantitative teachings, however, *Gallagher's* T_0 value also impacts the relative importance of reproduced images from a *qualitative* perspective. Namely, *Gallagher* teaches a complex process for assessing both facial features ("local features") and other aspects of images in order to establish a confidence level that the image includes a registered VIP. *Id.* at [0082-0095] (describing a process for assessing "local features" of a person's face), [0096-0126] (describing "global features" that apply to an image as a whole), [0127-0146] (describing an algorithm for assessing local and global features in order to determine a confidence level that a registered VIP is in an analyzed image). A PHOSITA would have understood that a close match between the "local features" of a registered VIP's face and the subject in an analyzed image will produce a high confidence level that the analyzed image includes the registered VIP. *Expert Dec.* (Ex. 1003), ¶¶ 60-62. Accordingly, a high T_0 value not only *quantitatively* limits the number of reproduced images, but will result in reproduced images that represent a *qualitatively* closer match to the registered VIP. *Id.* (further noting that such qualitative assessments were well known in the art, including in *Nakashima* at [0026], which teaches identifying, "based on photographed images and an extracted facial image corresponding to the identification information of a selected subject, which photographed image features the subject as a main subject").

Accordingly, whether Claim 10 is interpreted to require selectively reproducing relatively high important image information from a *quantitative* perspective (as disclosed by the '848 Patent), from a *qualitative* perspective, or both, *Gallagher* teaches this limitation.

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3. Claim 11

a) 11(P) "The recording and reproducing apparatus according to claim 8, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:"

To the extent that the preamble is limiting, *Gallagher* teaches memory for storing instructions for execution by the processor. *Gallagher* (Ex. 1005), [0039] ("The digital data is stored in a DRAM buffer memory 318 and subsequently processed by a digital processor 320 controlled by the firmware stored in firmware memory 328, which can be flash EPROM memory.").

b) 11(a) "control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,"

As discussed above with reference to Claim 10, *Gallagher* teaches a threshold value T_0 that may be modified by users in order to change how many images are selectively reproduced. *Id.* at [0146]. A PHOSITA would have understood that selecting different values for T_0 constitutes different "modes." For example, setting $T_0 = 1.0$ would return fewer images and setting $T_0 = 0.1$ would return more images. *Creusere Dec.* (Ex. 1003), ¶ 63.

A PHOSITA would further have been motivated to implement *Gallagher's* T_0 feature as a set of discrete values from which the user may select, rather than allowing the user to enter any value from 0 to 1. *Id.* at ¶ 64. Indeed, providing discrete values in such a context offers many benefits, including simplifying the user experience and also streamlining product's design. *Id.* at ¶¶ 64-65 (explaining that giving the user discrete options to determine the threshold that dictates which images are reproduced (e.g., high confidence, medium confidence, low confidence) is a more user-friendly experience than asking the user to choose any value between zero and one and that accommodating discrete settings streamlines the product's design because the system need

only be tested to accommodate those discrete settings, rather than tested to ensure proper operation for all possible inputs a user may choose in the absence of such settings).

A PHOSITA would have been familiar with well-established convention of providing pre-established settings (e.g., presets) for a variety of adjustments in consumer electronics. *Id.* at ¶ 64. For example, digital cameras at the time of the '848 Patent provided multiple "shooting modes" that automatically configured settings such as aperture and shutter speed to accommodate a set of photography situations (e.g., portrait, landscape, sport, etc.). *See, e.g.*, *Olympus E-510 Manual*[2] (Ex. 1007), 18 (explaining that auto shooting modes configure camera settings based on a user-selected mode and also describing "advanced shooting modes" that provide more adjustability for more advanced users); *Creusere Dec.* (Ex. 1003), ¶ 64 (discussing the same, and concluding that presets such as those disclosed provide an improved user experience for most users in the same way providing three discrete T_0 values would provide an improved user experience for most, if not all, users of the *Gallagher* system). Similarly, televisions at the time includes preset picture modes that allowed users to select one of three options (e.g., dynamic mode for clear/sharp picture, standard mode for general viewing, and movie mode for watching movies), rather than manually adjust each individual setting. *See, e.g., Samsung Plasma Manual*[3] (Ex. 1008), 29-30 (describing three modes and noting manual adjustments are also available); *Creusere Dec.* (1003), ¶ 64 (describing the same). Based on the well-established convention of providing users with discrete settings either in addition to or in place of full manual control, a PHOSITA would have understood the benefits of implementing Gallagher's T_0 setting as three discrete presets (e.g., high confidence,

[2] The *Olympus E-510 Manual* has a copyright date of 2007 (p. 140), indicating it is representative of features existing as of the date of invention of the '848 Patent.

[3] The *Samsung Plasma Manual* has a copyright date of 2007 (p. 2), indicating it is representative of features existing as of the date of invention of the '848 Patent.

medium confidence, low confidence), rather than requiring the user to enter any value between '0' and '1.' *Creusere Dec.* (1003), ¶¶ 63-65.

c) 11(b) "wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and"

The reproducing time will necessarily vary depending on the specific T_0 value selected by the user. As discussed above, a PHOSITA would have understood that the user could adjust the value of T_0 to take on at least three different user assigned values (e.g., a low value T_0=0, a medium value T_0=0.5, and a high value T_0=1). *Creusere Dec.* (Ex. 1003), ¶¶64-65. In this way, a user may control which images (and how many images) are returned as image subset 112. *Id.* at ¶ 66. For example, if the user were to assign a value of 1.0 for T_0 (*i.e.*, a first mode), the number of images returned would be low and would contain only those images representing the closest "match." *Id.*; *see also Gallagher* (Ex. 1005), [0138] ("The digital image collection subset 112 is the collection of images and videos having an associated proposed label with a probability that exceeds a threshold T_0, where T_0 ranges from $0<=T_o<=1.0$."). Similarly, if the user were to assign a value of 0.5 to T_0 (*i.e.*, a second mode), a PHOSITA would have understood more images would be returned, including images with less precise "match" than in the T_0 = 1.0 mode. *Creusere Dec.* (Ex. 1003), ¶¶ 66-67. Further, based on the simple fact that a processor executing more instructions takes longer than the same processor executing fewer instructions, a PHOSITA would have understood that reproducing fewer images takes less time than reproducing more images. *Id.* at ¶ 66.

d) 11(c) "the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode."

Gallagher expressly teaches that a small subset of images is reproduced when the value of T_0 is high—only those images with a strong "match" are included. *Gallagher* (Ex. 1005), [0146]. When the value of T_0 is decreased (*e.g.*, in a second mode from 1 to 0.5), the collection subset will add additional images, including images that have a weaker match:

> Preferably, the user can adjust the value of T_o through the user interface. **As the value increases, the digital image collection subset 112 contains fewer images or videos, but the likelihood that the images and videos in the digital image collection subset 112 actually do contain the person of interest increases.** In this manner, the user can determine the number and accuracy of the search results.

Id. at [0146]. Based on this teaching, a PHOSITA would have understood that the results of a second mode (*e.g.*, a $T_0 = 0.1$) include the image information reproduced under a first reproducing mode (*e.g.*, a $T_0 = 1.0$) in addition to information that was *not* produced in the first mode's results, i.e., images that demonstrated an insufficient "match" to be included in the subset produced by the first mode. *Creusere Dec.* (Ex. 1003), ¶ 67.

4. Claim 12

a) 12(P) The recording and reproducing apparatus according to claim 11, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:"

See limitation 11[P], *supra.*

b) 12(a) "control the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode,"

Gallagher teaches that the user may set the value for T_0 via the user interface and that the value of T_0 had a range between 0 and 1.0. *Gallagher* (Ex. 1005), [0138], [0146]. As discussed above with reference to limitation [11(a)], it would have been obvious to implement the value of

T_0 as three discrete values (e.g., a low value $T_0 = 0$, a medium value $T_0 = 0.5$, and a high value $T_0 = 1.0$) such that the subset of images returned in response to a search for a specific person would have varied based on at least these three different threshold settings. *Creusere Dec.* (Ex. 1003), ¶¶ 63-65. Because each of these threshold values would return a different subset, *Gallagher* renders obvious the claimed first, second, and third reproducing mode. *Id.*

c) 12(b) "wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode."

As discussed above with reference to limitation 11(b), a PHOSITA would have understood that adjusting the T_0 value necessarily adjusts the processing time required of *Gallagher's* selective reproduction. Namely, because fewer images are reproduced when T_0 is high, less processing time is required. This logic would apply to the full spectrum of T_0 values, including if users were presented three discrete T_0 values from which to choose, which would have been an obvious implementation of *Gallagher*.

5. Claim 13

a) 13(P) "A recording and reproducing apparatus for recording and reproducing image information, comprising:"

See limitation 8(P), *supra.*

b) 13(a) "a photographing sensor configured to photograph an object and generate image information;"

See limitation 8(c), *supra.*

c) 13(b) "a recorder configured to record the image information generated by the photographing sensor in a recording medium;"

See limitation 8(d), *supra.*

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d) ***13(c) "a reproducer configured to reproduce the image information recorded by the recorder;"***

See limitation 8(f), *supra.*

e) ***13(d) "processing circuitry configured to:"***

See limitation 8(a), *supra.*

f) ***13(e) "execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face,"***

See limitation 8(e), *supra.*

g) ***13(f) "register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode"***

See limitation 8(g), *supra.*

h) ***13(g) "wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and,"***

See limitation 8(h), *supra.*

i) ***13(h) "when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person"***

See limitation 8(i), *supra.*

j) ***13(i) "firstly pick out image information which includes the registered specific person,"***

As set forth above with reference to limitation 8(j), *Gallagher* teaches selectively reproducing a subset of images that include a registered specific person. All citations and arguments from this discussion are incorporated by reference.

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k) 13(j) "secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and"

As set forth above with reference to Claim 11, *Gallagher* further teaches that the subset of images selectively reproduced may be governed by a predetermined condition set by the user. Namely, the user may adjust the variable T_0, which will impact the subset produced both qualitatively and quantitatively as discussed above with reference to Claim 10. All citations and arguments from this discussion are incorporated by reference. Further, a PHOSITA would have understood that the user selecting a T_0 value is necessarily implemented via an instruction. *Creusere Dec.* (Ex. 1003), ¶¶ 68-69 (noting that a user setting a variable satisfies the plain meaning of instructing the system and that the processor adopting the user-specified T_0 value will also occur via processing instructions).

l) 13(k) "control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition."

Gallagher's expressly teaches that the user-specified T_0 value determines the images reproduced (i.e., reproduces selectively) and that the images are provided sequentially from highest to lowest "match" (i.e., reproduces sequentially):

> The digital image collection subset 112 is the collection of images and videos having an associated proposed label with a probability that exceeds a threshold To, where To ranges from $0<=T_o<=1.0$. Preferably, the digital image collection Subset 112 also contains the image and videos associated with features having labels matching the identity of the person of interest 252. **The images and videos of the digital image collection subset are sorted so that images and videos determined to have the highest belief of containing the person of interest appear at the top of the subset, following only the images and videos with features having labels matching the identity of the person of interest 252.**

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Gallagher (Ex. 1005), [0138].

6. Claim 15

a) 15. The recording and reproducing apparatus according to claim 13, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information having the predetermined condition including a relatively high importance level picked out from among the image information recorded in the recording medium which includes the registered specific person.

As explained above with reference to Claim 9, *Gallagher* teaches selectively reproducing relatively high important image information from a *quantitative* perspective and from a *qualitative* perspective pursuant to the user-specified T_0 value. And, as explained above with reference to Claim 13, *Gallagher* selectively and sequentially reproduces image information containing a registered person in accordance with the user-specified T_0 value.

7. Claim 16

a) 16(P) "The recording and reproducing apparatus according to claim 13, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and"

See limitations 13(j) and 13(k), *supra.*

b) 16(a) "wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode."

See limitations 11(b) and 11(c), *supra.*

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8. Claim 17

a) 17(P) "The recording and reproducing apparatus according to claim 13, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and"

See limitation 12(a), *supra.*

b) 17(a) "wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode."

See limitation 12(b), *supra.*

9. Claim 18

a) 18(P) "A recording and reproducing apparatus for recording and reproducing image information, comprising:"

See limitation 13(P), *supra.*

b) 18(a) "a photographing sensor configured to photograph an object and generate image information;"

See limitation 13(a), *supra.*

c) 18(b) "a recorder configured to record the image information generated by the photographing sensor in a recording medium;"

See limitation 13(b), *supra.*

d) 18(c) "a reproducer configured to reproduce the image information recorded by the recorder;"

See limitation 13(c), *supra.*

e) 18(d) "processing circuitry configured to:"

See limitation 8(a), *supra.*

f) ***18(e) "execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face;"***

See limitation 8(e), *supra.*

g) ***18(f) "register a person in the image information as a specific person, wherein a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person;"***

See limitation 8(h), *supra.*

h) ***18(g) "firstly pick out image information which includes the registered specific person,"***

See limitation 13(i), *supra.*

i) ***18(h) "secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and"***

See limitation 13(j), *supra.*

j) ***18(i) "control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition."***

See limitation 13(j), *supra.*

10. Claim 19

a) ***19(P) "The recording and reproducing apparatus according to claim 18, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and"***

See limitations 13(j) and 13(k), *supra.*

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b) 19(a) "wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode."

See limitations 11(b) and 11(c), *supra.*

11. Claim 20

a) 20(P) "The recording and reproducing apparatus according to claim 19, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and"

See limitations 12(a) and 13(k), *supra.*

b) 20(a) "wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode."

See limitation 12(b), *supra.*

VIII. TIMING FOR REQUESTING EX PARTE REEXAMINATION UNDER 35 U.S.C. 302

The filing of this Request for *Ex Parte* Reexamination is timely. The '848 Patent is still enforceable as of the date of filing this Request for *Ex Parte* Reexamination. *See* M.P.E.P. § 2211; 35 U.S.C. § 286.

IX. COMMUNICATIONS TO THIRD PARTY REQUESTER

The Requester's correspondence address is:

ERISE IP, P.A.
7015 College Boulevard, Suite 700
Overland Park, Kansas 66211

Samsung - Exhibit 1004 - Page 398

Telephone: (913) 777-5600

Facsimile: (913) 777-5601

X. CERTIFICATION THAT REEXAMINATION IS NOT PROHIBITED

In accordance with 37 C.F.R. § 1.510(b)(6), the Third Party Requester hereby certifies that the statutory estoppel provisions of 35 U.S.C. § 315(e)(1) and 35 U.S.C. § 325(e)(l) do not prohibit the Requester from filing this *Ex Parte* Reexamination Request.

XI. CERTIFICATION OF SERVICE ON PATENT OWNER

In accordance with 37 C.F.R. § 1.510(b)(5), the Third Party Requester hereby certifies that the above captioned Request for *Ex Parte* Reexamination under 37 C.F.R. § 1.510 will be served upon:

MATTINGLY & MALUR, PC
1800 Diagonal Road
Suite 210
Alexandria, VA 22314

XII. CONCLUSION

For at least the forgoing reasons, Requester respectfully submits substantial new questions of patentability have been raised with respect to Claims 8, 10–13, and 15–20 of the '848 Patent. Accordingly, Claims 8, 10–13, and 15–20 of the '848 Patent are unpatentable over the prior art documents cited herein under 35 U.S.C. § 103.

Requester respectfully requests that this Request for *Ex Parte* Reexamination of the '848 Patent be granted by the U.S. Patent and Trademark Office, and that the reexamination be conducted with "special dispatch" pursuant to 35 U.S.C. § 314 and with "priority over all other cases" in accordance with M.P.E.P. § 2661.

Prompt and favorable consideration of this Request for *Ex Parte* Reexamination is respectfully requested.

Date: December 23, 2020

Respectfully submitted,

/Jennifer C. Bailey/

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PTO/SB/08a (07-09)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Mari Yoshida
Art Unit	
Examiner Name	
Attorney Docket Number	2638-19.06

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	EX1005	US-2007/0098303	05-03-2007	Gallagher, et al.	
	EX1011	US-2005/0063566	03-24-2005	Beck, et al.	
	EX1006	US-2007/0019083	01-25-2007	Nakashima	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] -Number[4] -Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

PTO/SB/08b (07-09)
Approved for use through 11/30/2020. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 2

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Mari Yoshida
Art Unit	
Examiner Name	
Attorney Docket Number	2638-19.06

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	EX1002	'848 Patent File History	
	EX1004	'368 Patent File History	
	EX1007	Apple Complaint	
	EX1008	ITC Complaint	
	EX1012	Olympus E-510 User Manual	
	EX1013	Samsung Plasma Display Manual	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

EXHIBIT 1003

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.
Petitioner

v.

MAXELL, LTD.,
Patent Owner

Inter Partes Review Case No. IPR2021-00367
U.S. Patent No.10,176,848

DECLARATION OF DR. CHARLES D. CREUSERE

I, Charles D. Creusere, hereby declare the following:

I. BACKGROUND AND QUALIFICATIONS

1. My name is Charles D. Creusere, Ph.D and I am over 21 years of age and otherwise competent to make this Declaration. I make this Declaration based on facts and matters within my own knowledge and on information provided to me by others.

2. I have been retained by counsel for Petitioner as a technical expert in the above-captioned case. Specifically, I have been asked to render certain opinions in regard to the IPR petition with respect to U.S. Patent No. 10,176,848 (the "'848 Patent"). I understand that the Challenged Claims are claims 8, 10-13, and 15-20. My opinions are limited to those Challenged Claims.

3. My compensation in this matter is not based on the substance of my opinions or the outcome of this matter. I have no financial interest in Petitioner. I am being compensated at an hourly rate of $350 for my analysis and testimony in this case.

4. In writing this declaration, I have considered my own knowledge and experience, including my work experience in the field of electrical and computer engineering; my experience in teaching this area; and my experience working with others involved in this field, including in both the design and analysis of multimedia-

focused communication systems and subsystems. In reaching my opinions in this matter, I have also reviewed the following references and materials:

- The '848 Patent (Ex. 1001)
- The '848 Patent File History (Ex. 1002)
- The File History of the '848 Patent's Parent (Ex. 1004)
- U.S. Patent Application Publication 2007/0098303 Gallagher et al. ("Gallagher") (Ex. 1005)
- U.S. Patent Application Publication 2007/0019083 Nakashima et al. ("Nakashima") (Ex. 1006)
- U.S. Patent Application Publication 2005/0063566 Beek et al. ("Beek") (Ex. 1011)
- Olympus E-510 User Manual (Ex. 1012)
- Samsung Plasma Display Manual (Ex. 1013)

A. Educational Background

5. I received a Bachelor of Science degree in Electrical and Computer Engineering from the University of California at Davis in 1985. I received a Master's of Science degree in Electrical and Computer Engineering from the University of California at Santa Barbara in 1990, and I received my Ph.D. in Electrical and Computer Engineering, also from the University of California at Santa Barbara, in 1993."

B. Professional Experience

6. I am currently a Full Professor in the Klipsch School of Electrical & Computer Engineering at New Mexico State University, and I hold the Frank Carden Endowed Chair in Telemetering and Telecommunications. I was an Assistant Professor at New Mexico State from January 2000 until I became an Associate

Professor in 2004. I have been a Full Professor since August 2010. My research and teaching at New Mexico State have focused on digital signal processing and communications.

7. I have extensive experience in the technical areas of the '848 Patent, including more than 30 years of experience with analog and digital systems and, in particular, with digital signal processing and its application to communication systems.

8. After receiving my B.S. from U. C. Davis in 1985, I went to work for the Naval Weapons Center, China Lake as a civilian Department of Defense (DoD) employee. From 1985 until the program was handed off to the contractor in 1989, I was the lead designer for the guidance electronics of the Laser Guided Training Round. My work on this project included analog and digital circuit design, embedded software design, and front-end systems integration and testing. In 1989, I was awarded a fellowship from the DoD to pursue graduate degrees at the University of California, Santa Barbara. After returning to China Lake with my PhD in 1993, I continued to pursue practical engineering projects along with my more theoretical endeavors. One such project involved the combination of automatic target recognition (ATR) with video compression for communicating video over low bandwidth digital radio links. Specifically, we applied correlation-based feature recognition to aerial imagery to identify objects of particular interest (e.g., tanks and

other military vehicles) and used the knowledge gained by doing this to control the allocation of bits in our video compression algorithm to enhance quality around the objects of interest. In other words, we effectively reduced the image quality in the parts of each video frame that did not contain, say, a tank, in order to increase the image quality in the area around that tank. As part of this specific research effort, we produced one journal paper and two conference papers.

9. During my Master's program at UCSB I pursued a dual communications/digital signal processing coursework specialization and, as a result, took the following relevant graduate classes: ECE278 (Image Processing), ECE242 (Digital Coding of Analog Signals), ECE258 Advanced Digital Signal Processing, ECE148 (Real-Time Digital Signal Processing), ECE277B (Pattern Recognition), ECE243 (Digital Communications), ECE594C (Error Control Codes), and ECE205A (Information Theory). All of these classes have relevance to the patent in suit, but ECE278, ECE242 (which is focused on data compression), and ECE277B are particularly pertinent here given that video compression is a necessary part of any video communication, distribution, or storage system and that claimed invention relies facial recognition (which entails both image processing and pattern recognition) to control the retrieval and reproduction process. In addition to the above, as part of my minor area of specialization in computer engineering, I took classes in linear and nonlinear programming, optimization theory, neural networks,

and computational linear algebra. My Ph.D. research was focused on multimedia data compression using multirate filter banks and wavelets, and I continued to do research in this area for the six years I spent working at the Naval Air Warfare Center in China Lake, CA after completing my dissertation. During this time, I also explored the combination of video compression with automatatic target recognition and wrote a number of papers in the area, as previously mentioned above, including the following:

- C.D. Creusere and A. Van Nevel, "ATR-directed image and video compression," *Journal of Aircraft,* Vol. 36, No. 4, pp. 626-31, July-August 1999.
- C.D. Creusere and A. Van Nevel, "Autonomous target recognition directed image compression," *Proc. of the AIAA*, Nov. 1998.
- A. Van Nevel and C.D. Creusere, "Intelligent Bandwidth Compression," *Proc. of the SPIE*, Denver, CO, July 1999.

10. Since joining the faculty of New Mexico State University in 2000, I have taught numerous classes at both the graduate and undergraduate levels. These include EE565 (Pattern Recognition), EE586 (Image Processing), EE573 (Signal Compression), EE545 (Digital Signal Processing), and EE586 (Information Theory). Again, the first three of these classes are particularly relevant to the claimed invention, although all of these classes contribute to my broader understanding of the general field of endeavor.

11. A listing of the cases (including trials before the Patent Trial and Appeal Board) in which I have testified within the last four years is found following

my CV in the attached Appendix A. I've also listed my publications and patents in Appendix A.

C. Other Relevant Qualifications

12. In addition to the experience and publications listed above, I have also received the following awards and distinctions that are relevant to the subject matter of this declaration. I am currently a Senior Area Editor for IEEE Transactions on Image Processing and have previously served as an Associate Editor for IEEE Transactions on Image Processing from 2010 through 2014. I have also served in this capacity from 2002 through 2005. From 2008-2013, I served as an Associate Editor for IEEE Transactions on Multimedia.

13. In 2004, I served as the co-general chair for the IEEE Digital Signal Processing Workshop in Taos, New Mexico. In 2012 and 2014, I served as the co-technical chair for the Southwest Symposium on Image Analysis and Interpretation held in Santa Fe, New Mexico and San Diego, CA, respectively. In addition, I also served as the technical chair for the 2015 International Telemetering Conference held in Las Vegas, NV. I am also a member of the technical program committees for the IEEE International Conference on Image Processing, the IEEE International Conference on Acoustics, Speech, and Signal Processing, and the IEEE Data Compression Conference.

II. LEGAL FRAMEWORK

A. Obviousness

14. I am a technical expert and do not offer any legal opinions. However, counsel has informed me as to certain legal principles regarding patentability and related matters under United States patent law, which I have applied in performing my analysis and arriving at my technical opinions in this matter.

15. I have been informed that the Patent Trial and Appeal Board ("PTAB") now applies the claim construction standard applied by Article III courts (i.e., the *Phillips* standard) regardless of whether a patent has expired. I have been informed that under the *Phillips* standard, claim terms are to be given the meaning they would have to a person having ordinary skill in the art at the time of the invention, taking into consideration the patent, its file history, and, secondarily, any applicable extrinsic evidence (e.g., dictionary definitions). I have reviewed the Claim Construction section in the petition for which this declaration is submitted in support, and I have applied those constructions in my analyses. For all claim language not addressed in this section of the petition, I have applied the plain and ordinary meaning pursuant to the *Phillips* standard.

16. I have also been informed that a person cannot obtain a patent on an invention if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. I have been informed that a conclusion of obviousness may be founded upon more than a single item of prior art. I have been further informed that obviousness is determined by evaluating the following factors: (1) the scope and content of the prior art, (2) the differences between the prior art and the claim at issue, (3) the level of ordinary skill in the pertinent art, and (4) secondary considerations of non-obviousness. In addition, the obviousness inquiry should not be done in hindsight. Instead, the obviousness inquiry should be done through the eyes of a person having ordinary skill in the relevant art at the time the patent was filed.

17. In considering whether certain prior art renders a particular patent claim obvious, counsel has informed me that I can consider the scope and content of the prior art, including the fact that one of skill in the art would regularly look to the disclosures in patents, trade publications, journal articles, industry standards, product literature and documentation, texts describing competitive technologies, requests for comment published by standard setting organizations, and materials from industry conferences, as examples. I have been informed that for a prior art reference to be proper for use in an obviousness analysis, the reference must be

"analogous art" to the claimed invention. I have been informed that a reference is analogous art to the claimed invention if: (1) the reference is from the same field of endeavor as the claimed invention (even if it addresses a different problem); or (2) the reference is reasonably pertinent to the problem faced by the inventor (even if it is not in the same field of endeavor as the claimed invention). In order for a reference to be "reasonably pertinent" to the problem, it must logically have commended itself to an inventor's attention in considering his problem. In determining whether a reference is reasonably pertinent, one should consider the problem faced by the inventor, as reflected either explicitly or implicitly, in the specification. I believe that all of the references that my opinions in this IPR are based upon are well within the range of references a person having ordinary skill in the art would consult to address the type of problems described in the Challenged Claims.

18. I have been informed that, in order to establish that a claimed invention was obvious based on a combination of prior art elements, a clear articulation of the reason(s) why a claimed invention would have been obvious must be provided. Specifically, I am informed that, under the U.S. Supreme Court's *KSR* decision, a combination of multiple items of prior art renders a patent claim obvious when there was an apparent reason for one of ordinary skill in the art, at the time of the invention, to combine the prior art, which can include, but is not limited to, any of the following rationales: (A) combining prior art methods according to known methods to yield

predictable results; (B) substituting one known element for another to obtain predictable results; (C) using a known technique to improve a similar device in the same way; (D) applying a known technique to a known device ready for improvement to yield predictable results; (E) trying a finite number of identified, predictable potential solutions, with a reasonable expectation of success; (F) identifying that known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art; or (G) identifying an explicit teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine the prior art references to arrive at the claimed invention.

19. I am informed that the existence of an explicit teaching, suggestion, or motivation to combine known elements of the prior art is a sufficient, but not a necessary, condition to a finding of obviousness. This so-called "teaching suggestion-motivation" test is not the exclusive test and is not to be applied rigidly in an obviousness analysis. In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. Instead, the important consideration is the objective reach of the claim. In other words, if the claim extends to what is obvious, then the claim is invalid. I am further informed that the obviousness analysis often necessitates

consideration of the interrelated teachings of multiple patents, the effects of demands known to the technological community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art. All of these issues may be considered to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent.

20. I also am informed that in conducting an obviousness analysis, a precise teaching directed to the specific subject matter of the challenged claim need not be sought out because it is appropriate to take account of the inferences and creative steps that a person of ordinary skill in the art would employ. The prior art considered can be directed to any need or problem known in the field of endeavor at the time of invention and can provide a reason for combining the elements of the prior art in the manner claimed. In other words, the prior art need not be directed towards solving the same specific problem as the problem addressed by the patent. Further, the individual prior art references themselves need not all be directed towards solving the same problem. I am informed that, under the *KSR* obviousness standard, common sense is important and should be considered. Common sense teaches that familiar items may have obvious uses beyond their primary purposes.

21. I also am informed that the fact that a particular combination of prior art elements was "obvious to try" may indicate that the combination was obvious even if no one attempted the combination. If the combination was obvious to try

(regardless of whether it was actually tried) or leads to anticipated success, then it is likely the result of ordinary skill and common sense rather than innovation. I am further informed that in many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature or knowledge, will drive the design of an invention. I am informed that an invention that is a combination of prior art must do more than yield predictable results to be non-obvious.

22. I am informed that for a patent claim to be obvious, the claim must be obvious to a person of ordinary skill in the art at the time of the invention. I am informed that the factors to consider in determining the level of ordinary skill in the art include (1) the educational level and experience of people working in the field at the time the invention was made, (2) the types of problems faced in the art and the solutions found to those problems, and (3) the sophistication of the technology in the field.

23. I am informed that it is improper to combine references where the references teach away from their combination. I am informed that a reference may be said to teach away when a person of ordinary skill in the relevant art, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the patent applicant. In general, a reference will teach away if it suggests that the line of

development flowing from the reference's disclosure is unlikely to be productive of the result sought by the patentee. I am informed that a reference teaches away, for example, if (1) the combination would produce a seemingly inoperative device, or (2) the references leave the impression that the product would not have the property sought by the patentee. I also am informed, however, that a reference does not teach away if it merely expresses a general preference for an alternative invention but does not criticize, discredit, or otherwise discourage investigation into the invention claimed.

24. I am informed that even if a *prima facie* case of obviousness is established, the final determination of obviousness must also consider "secondary considerations" if presented. In most instances, the patentee raises these secondary considerations of non-obviousness. In that context, the patentee argues an invention would not have been obvious in view of these considerations, which include: (a) commercial success of a product due to the merits of the claimed invention; (b) a long-felt, but unsatisfied need for the invention; (c) failure of others to find the solution provided by the claimed invention; (d) deliberate copying of the invention by others; (e) unexpected results achieved by the invention; (f) praise of the invention by others skilled in the art; (g) lack of independent simultaneous invention within a comparatively short space of time; (h) teaching away from the invention in the prior art.

25. I am further informed that secondary considerations evidence is only relevant if the offering party establishes a connection, or nexus, between the evidence and the claimed invention. The nexus cannot be based on prior art features. The establishment of a nexus is a question of fact. While I understand that the Patent Owner here has not offered any secondary considerations at this time, I will supplement my opinions in the event that the Patent Owner raises secondary considerations during the course of this proceeding.

III. OPINION

A. Level of a Person of Ordinary Skill in the Art

26. I was asked to provide my opinion as to the level of skill of a person having ordinary skill in the art ("PHOSITA") of the '848 Patent at the time of the claimed invention, which counsel has told me to assume is May 19, 2008. In determining the characteristics of a hypothetical person of ordinary skill in the art of the '848 Patent, I considered several factors, including the type of problems encountered in the art, the solutions to those problems, the rapidity with which innovations are made in the field, the sophistication of the technology, and the education level of active workers in the field. I also placed myself back in the time frame of the claimed invention and considered the colleagues with whom I had worked at that time.

27. In my opinion, a PHOSITA at the time of the claimed invention of the '848 Patent would have had at least a bachelor's degree in electrical engineering, computer engineering, computer science, or a related field, with at least one year of experience in the field of image processing. Additional education or experience might substitute for the above requirements. Such a PHOSITA would have been capable of understanding the '848 patent and the prior art references discussed herein.

28. Based on my education, training, and professional experience in the field of the claimed invention, I am familiar with the level and abilities of a person of ordinary skill in the art at the time of the claimed invention. Additionally, I met at least these minimum qualifications to be a person having ordinary skill in the art as of the time of the claimed invention of the '848 Patent.

B. Description of the Alleged Invention of the '848 Patent

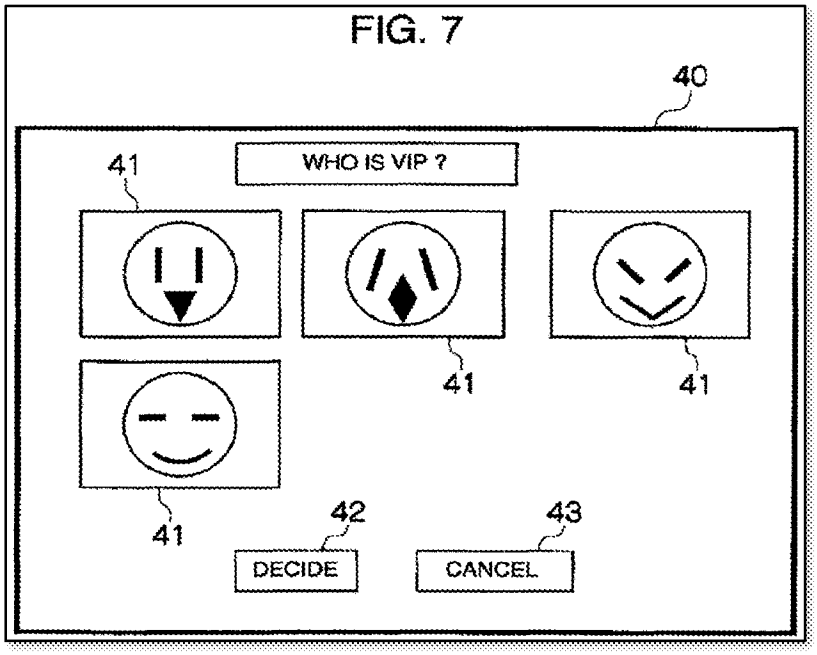
29. The '848 Patent generally relates to processing image information (video or still) so as to identify a particular individual in said image information. As discussed in detail below, facial recognition is used both to (1) set a template/reference face for a particular person and (2) find that person in other image information. According to the '848 Patent, the recording mediums in current video cameras had become large enough that scenes photographed with a long duration of time or photographed a plurality of times could be stored therein making it difficult

for a user to quickly find a target scene from within the plurality of scenes stored (i.e., recorded) within the recording medium. *'848 Patent,* 1:55-61. The '848 Patent teaches that these conventional recording and reproducing apparatus are generally equipped with a function for displaying a list of thumbnails images of the scenes; however, only one thumbnail image per scene is displayed making it difficult for a user to know the whole contents of a scene. *Id.* at 1:62-2:1.

30. The '848 Patent seeks to remedy this difficulty by providing a recording/reproducing apparatus that allows a user to register a very important person (VIP) and selectively reproduce image information in which a VIP appears frequently. *Id.* at 2:23-40. It is worth noting that the Challenged Claims, on their face, are not limited to locating a registered person in video or to reproducing video segments within which a VIP appears frequently, but are instead broad enough to include still image processing. Further, I understand the Patent Owner has asserted the Challenged Claims against still image functionality. The detailed disclosures in the '848 Patent, however, are entirely directed to video processing. Some disclosed concepts, such as determining the frequency with which a VIP appears in a video clip, simply do not apply to still images. Indeed, a particular person either is or is not in a still image, so it makes no sense to ask how frequently a particular person appears in a single still image. This disconnect between the described embodiments and the Challenged Claims does create confusion, as I describe below. That said, I

have done my best to ascribe some concrete meaning to the Challenged Claims based on the various video-specific disclosures in the '848 Patent.

31. The '848 Patent provides two ways in which a user may register a VIP: (1) selecting a VIP from image information previously stored or (2) take a new picture of the VIP (i.e., "Photograph Now"). If a user opts to register the VIP from previously captured image information, the user is presented with a VIP deciding screen (RN 40) such as that depicted in Fig. 7 below:



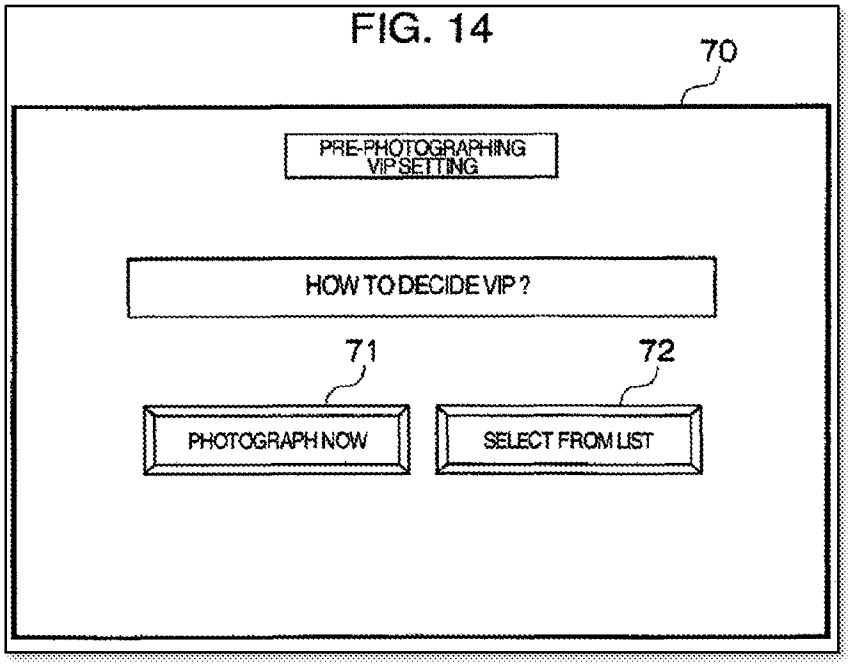
Id. at Fig. 7.

32. The '848 Patent teaches that "[t]he VIP deciding screen 40 is a screen to be used for a user to decide a VIP in the object scene" and that "[t]he VIP deciding screen 40 displays face images 41 of all persons recognized during photographing

the object scene." *Id.* at 7:53-56. In other words, the face images presented for selection are those extracted from previously captured and stored image information. After selecting a face image 41 from the plurality of faces, a user may then register the selected face as the VIP by pressing the "decide" button. *Id.* at 8:4-7.

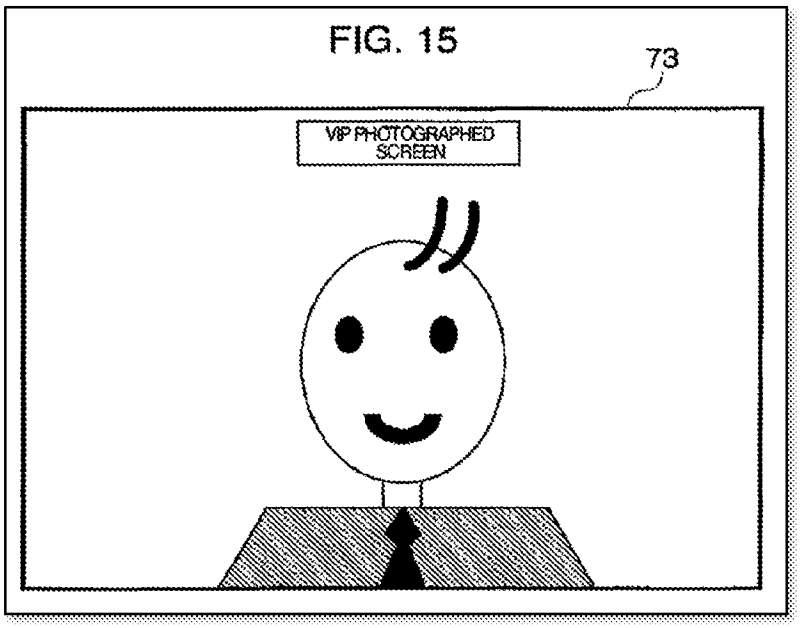
33. The second method of registering a VIP allows the user to take a new picture of the particular person to be registered. In Fig. 14 below, this method begins by selecting "Photograph Now"—option 71:

FIG. 14

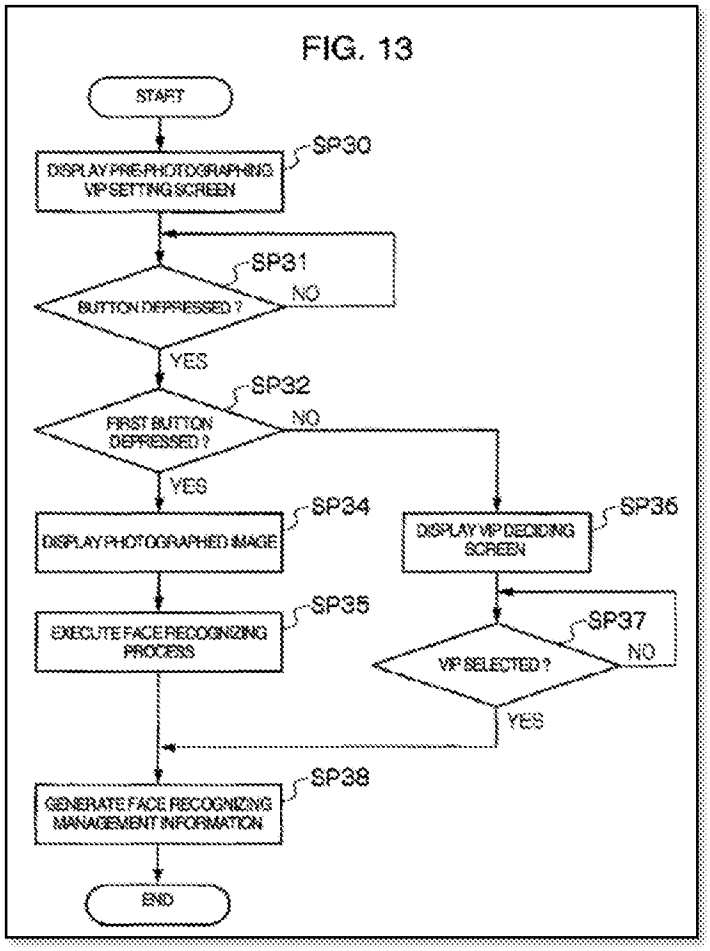


Id. at Fig. 14, 12:33-42 (describing options 71 and 72 and noting the "select from list" option is the embodiment in which a user selects from faces previously captured, i.e., the registration process I describe in the preceding two paragraphs). After the user selects option 71, "the system controller 61 drives the image sensor 7,

analog/digital converter 9 and CODEC 10 to display an image illustrated in FIG. 15 and photographed at that time by a user, on the display 6 (Step SP34). **In this case, the user photographs a VIP to be registered with the video camera 60**." *Id.* at 12:47-52 (emphasis added). Fig. 15 below illustrates this option in which a new photograph (e.g., centered on the person's face) is used to register a VIP:



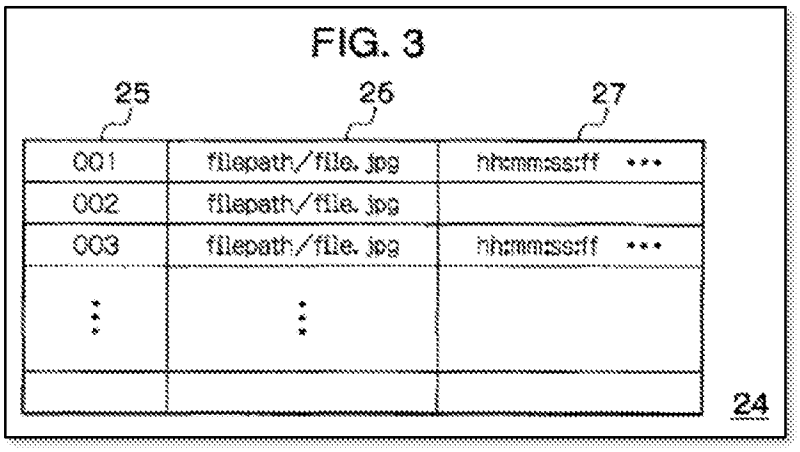
34. Fig. 13 (below) illustrates the process flow that permits a user to choose one of the two above-described methods of registering a VIP:



Id. at Fig. 13, *see also* 12:22-13:7 (discussing the processing steps taken by the controller with regards to the VIP setting process). At SP32, the system determines which method the user selected. If the user decides to register a VIP using existing image information, the process flows to the right, a VIP deciding screen is displayed at SP36. And, if the user decides to register a VIP using a new image, the process flows down through SP34 and SP35 where an image of the VIP is captured and a facial recognition process is performed.

35. After a user has selected the VIP, either by taking a new photograph or selecting from the list of recognized faces, the face recognition unit then forms "face recognition management information 24 illustrated in Fig. 3 registering only information on the selected VIP (Step SP38)." *Id.* at 13:2-7. As illustrated in Fig. 3 below, face recognition management information consists of three data fields:

FIG. 3



Id. at Fig. 3. The first field (25) is a unique ID assigned to a registered VIP, the second field (26) is a filepath to the registered VIP's face, and the third field (27) collects each instance of the registered VIP appearing in image information. *Id.* at 5:53-67 (explaining that "[t]he face ID information 25 is information representative of a unique ID given to each face recognized by the face recognizing execution unit 15 (hereinafter called a face ID)[,] the path/file name information 26 is information representative of a path to the image file of an image of a corresponding face (hereinafter called a face image) or a file name of the image file," and "[t]he frame position information 27 is information representative of a frame position (hour,

minute, second and frame number) where a corresponding face is recognized"); *see also id.* at 6:1-7 (teaching "frame position information 27 includes all frame positions on which a corresponding face appears").

36. After a VIP is registered, the importance level of each chapter in a scene (i.e., recorded video) is determined based upon the number of appearances or frequency of a VIP within each chapter. *Id.* at 7:22-43, 8:21-29 (teaching stating the importance level setting process by counting the number of appearances of a VIP in each chapter), 8:16-61 (generally discussing the processing steps taken to determine and set the importance level of each chapter). The '848 Patent teaches that the highest importance level of "1" is assigned to chapters in which the VIP appears most frequently and the lowest importance level of "5" set to the chapter on which the VIP appears least frequently. *Id.* at 8:50-61.

37. After importance levels have been assigned, the '848 Patent teaches that the user may then request that the chapters be selectively reproduced based on the importance levels. Three reproduction modes are described—standard, express, and super express. *Id.* at 9:20-10:3. In the standard reproduction mode, "all chapters are sequentially reproduced in an order of smaller chapter ID, irrespective of the chapter importance level set to each chapter. *Id.* at 9:20-28. In the express reproduction mode, "only the chapters having the chapter importance level "3" or smaller (only the chapters having the importance levels "1" to "3") are reproduced." *Id.* 9:38-41.

Finally, in the super express reproduction mode, "only the chapters having the chapter importance level "1" are reproduced." *Id.* at 9:46-54. Accordingly, the super express reproduction mode reproduces the fewest chapters, and the standard reproduction mode reproduces the most chapters.

C. Opinions Related to *Gallagher* and *Nakashima*

i. Overview of Gallagher (Ex. 1005)

38. *Gallagher* teaches "[a] method of identifying a particular person in a digital image collection[.]" *Gallagher* (Ex. 1005), Abstract. *Gallagher's* description significantly parallels the '848 Patent. For example, both the '848 Patent and *Gallagher* point out that consumers are capable of accruing large collections of digital images and video, and that, as a result, consumers have encountered a problem with organizing and being able to retrieve images and videos. *Gallagher* explains, "[w]ith the advent of digital photography, consumers are amassing large collections of digital images and videos[,]" and that "[t]he average number of images captured with a digital cameras . . . is still increasing each year." *Id.* at [0003]. *Gallagher* teaches that as a consequence of this increase in the number of images captured, "the organization and retrieval of images and videos is [] a problem for the typical consumer." *Id.* Similarly, the '848 Patent teaches that due to the "capacity of a recording medium of a recent video camera is becoming large so that a scene photographed in a long time duration . . . or scenes photographed a plurality of times

can be stored in the recording medium[,]" and "[i]t is therefore difficult for a user to quickly find a target scene from a number of scenes recorded in the recording medium." *'848 Patent* (Ex. 1001), 1:55-61.

39. As another example, both the '848 Patent and *Gallagher* teach performing the step of facial recognition on a photographed image and using the facial recognition data to then identify other images containing the same face/individual. *Gallagher* explains that its method of identifying a particular person in a digital image collection includes "determining features related to the particular person from the first image or second image or both; and using such particular features to identify another image in the digital image collection believed to contain the particular person." *Gallagher* (Ex. 1005), Abstract, [0074] (teaching the use of a detector to compute the features of a person in an image or video). Similarly, the '848 Patent teaches "[t]he present invention provides further a recording and reproducing method . . , the method comprising: a first step of executing a face recognizing process for a photographed image based on the image information a second step of setting an importance level of each chapter in accordance with a result of the face recognizing process for a VIP set by a user; and a third step of selectively reproducing each chapter having a relevant importance level, among importance levels of respective chapters." *'848 Patent* (Ex. 1001), 2:41-52.

40. *Gallagher* teaches a method of registering a person of interest or a VIP from an image that has been captured. Namely, *Gallagher* teaches a "labeler" function that allows the user to provide a name, identifier, or location of a person of interest within an image or video. *Gallagher* at [0049]-[0054]. This association between the user-provided label and the VIP's image is then stored in a database 114. *Id.* at [0049]. After the user has labeled the person of interest within an image, a feature extractor will then extract "features from the digital image collection in association with the label(s) from the labeler 104[,]" and store them in association with the labels in the database 114. *Id.* at [0049], [0082] (teaching that the feature extractor outputs local features like those depicted in Fig. 12D), [0081] (teaching that the local features are associated with a person and can be the eyes, nose, mouth, etc.). Thus, *Gallagher* teaches storing within a database (i.e., registering) a unique id (e.g., name, identifier, or location) assigned to a person of interest along with their features (e.g., eyes, nose, mouth). *Gallagher* teaches that a person identifier then utilizes these features and labels stored in the database 114 to determine a digital image subset that contains a person of interest. *Id.* at [0059], [0048] (teaching that the digital image subset is a set of images from the image collection 102).

41. Fig. 3 below illustrates a method by which images believed to contain a person of interest are selectively reproduced:

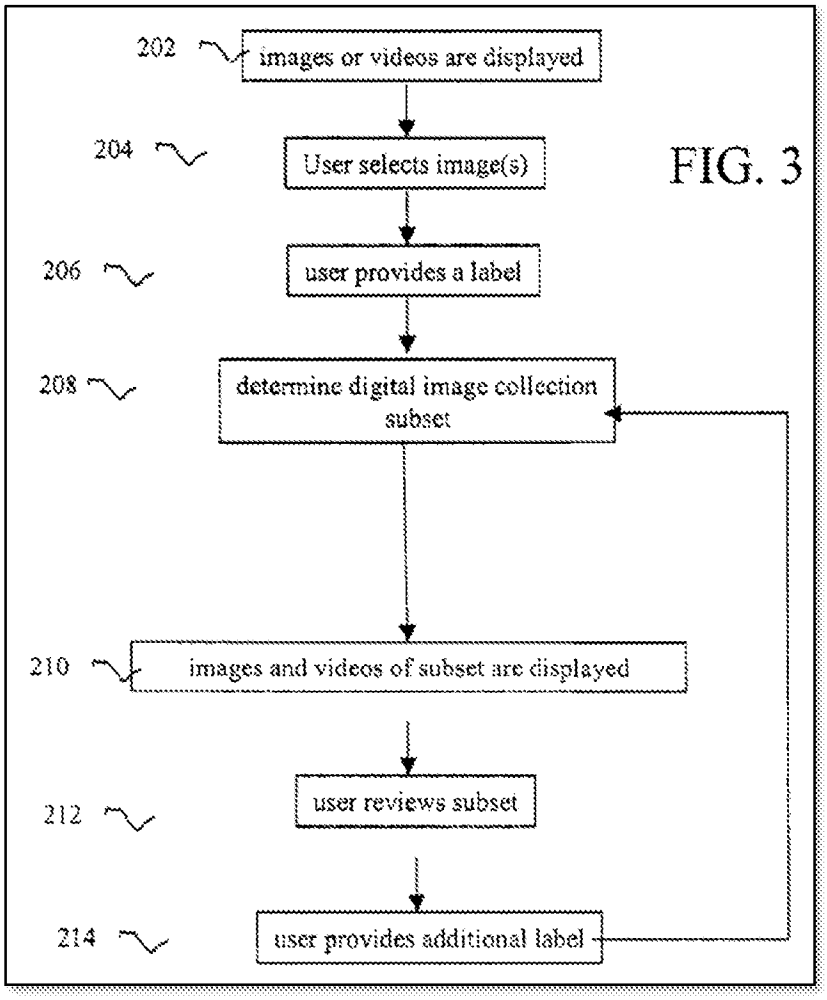


FIG. 3

Id. at Fig. 3, [0058-0059] (describing the same). After the user is presented with the image collection subset 112 which is believed to contain the person of interest, the user is provided with the opportunity to provide an indication as to whether or not the images within the subset 112 do in fact contain the person of interest. In other words, the user is able to provide feedback as to the accuracy or correctness of the results presented in the image subset 112. *Id.*

42. *Gallagher* also teaches that a user may customize the processing that produces subset 112 containing the registered person of. Namely, *Gallagher* teaches that a user can adjust the value of variable T_0. "As the value increases, the digital image collection subset 112 contains fewer images or videos, but the likelihood that the images and videos in the digital image collection subset 112 actually do contain the person of interest increases. In this manner, the user can determine the number and accuracy of the search results." *Id.* at [0146], [0138] (teaching that "[t]he digital image collection subset 112 is the collection of images and videos having an associated proposed label with a probability that exceeds a threshold T_0, where T_0 ranges from $0<=T_0<=1.0$.").

43. Because *Gallagher*, like the '848 Patent, is directed to performing facial recognition on a photo and registering a detected face for further processing, *Gallagher* is in the same field of endeavor as the '848 Patent. *Compare id.* at Abstract ("A method of identifying a particular person in a digital image collection . . . determining features related to the particular person from the first image or second image or both; and using such particular features to identify another image in the digital image collection believed to contain the particular person.") *with '848 Patent* (Ex. 1001), 2:41-52 ("a recording and reproducing method . . . comprising: a first step of executing a face recognizing process for a photographed image based on the image information; a second step of setting an importance level of each chapter

in accordance with a result of the face recognizing process for a VIP set by a user; and a third step of selectively reproducing each chapter having a relevant importance level, among importance levels of respective chapters.").

44. *Gallagher* is further directed at solving the same problems as the '848 Patent— allowing a user to efficiently locate images and video that contain a person of interest, thereby reducing the time it takes for a user to locate said images. *Compare Gallagher* (Ex. 1005), [0003]-[0004] (noting *Gallagher* teaches that "[a] user desires to find images and videos containing a particular person of interest[,]" but that if a user were to perform a manual search to find these images that it would be a slow laborious process. Or if a user were to use software to ". . . tag images with labels indicating the people in the images so that a search can later be done, the initial labeling process is still very tedious and time consuming.") *with '848 Patent* (Ex. 1001), 1:55-61 (describing that recording medium capacity of current video cameras has become so large that scenes with long time durations or scenes that have been photographed a plurality of times can be stored thereby making it ". . .difficult for a user to quickly find a target scene from a number of scenes recorded in the recording medium."); 2:18-22 (describing how the "present invention has been made in consideration of the above described issues, and provides a recording and reproducing apparatus and recording and reproducing method allowing a user to rapidly and easily find a target chapter or scene."); 2:37-40 ("Accordingly, the

recording and reproducing apparatus of the present invention can selectively reproduce a particular chapter in accordance with user settings, such as a chapter on which VIP appears frequently."). Because *Gallagher* is in the same field of endeavor and is directed to the same problem as the '848 Patent, a PHOSITA would have understood the two are analogous.

ii. Overview of Nakashima (Ex. 1006)

45. *Nakashima* teaches "a technique for notifying a user a photograph quantity of a particular subject taken by an image capturing apparatus." *Nakashima* (Ex. 1006), [0002]. *Nakashima* describes an image capturing apparatus that comprises a "registration section which relates identification facial images which are image data to be used as criteria for identifying faces of subjects among the image data stored in the storage section to identification information of each subject . . . ; a facial image extraction section which extracts facial images which are facial portion regions of a person from photographed images . . . ; an identification section which identifies from the database an identification facial image matching an extracted facial image . . . ; and a photograph quantity calculation section which calculates for each subject identification information a photograph quantity which is the total number of photographed images from which an extracted facial image matching an identification facial image corresponding to identification information for each subject has been extracted." *Nakashima* (Ex. 1006), Abstract.

46. *Nakashima* provides an exemplary table in Fig. 7 (reproduced below) illustrating the quantity of photographs taken with respect to a particular subject by the image capturing apparatus:

FIG.7

PHOTOGRAPH QUANTITY BY SUBJECT LIST TABLE

SUBJECT ID	NAME	PHOTOGRAPH TARGET	PHOTOGRAPH QUANTITY	MAIN SHOT QUANTITY
1	TARO FUJI	ON	5	2
2	HANAKO TAKAHASHI	ON	3	1
3	JIRO SUZUKI	OFF	0	0
4	KAZUKO KATO	ON	0	0
5	SABURO YAMAMOTO	ON	1	0
⋮	⋮	⋮	⋮	⋮

~75c

Id. at Fig. 7, [0122] (teaching that "[t]he basic information registration table 75a relates "registration facial images", which are images to be used as criteria for identifying the face of each individual subject, to "subject IDs", which are identification information assigned to each individual subject" and that "[t]he "registration facial images" and "subject IDs" are further related to "names" of individuals.").

47. *Nakashima* describes multiple ways to register a facial images. First, a face may be registered by taking a new photograph of the person to be registered. *Id.* at [0123] (noting registration involves "a photographer using the digital camera 100 by individually photographing the face of each subject"). Second, a face may be

registered using image data previously captured and stored in memory. *Id.* ("registration facial images may be input to the HDD 75 from various electronic devices such as an external server or camera via the communications port 107"); *see also id.* at [0147] (teaching that facial images stored in the basic information registration table do not need to be obtained from the camera but may also be received from an external server or from a memory card).

48. Because *Nakashima*, like the '848 Patent, is directed to performing facial recognition on a photo and registering a detected face for further processing, *Nakashima* is in the same field of endeavor as the '848 Patent. *Compare id.* at Abstract (describing registering facial images to be used for identifying faces of subjects, performing facial recognition on captured photos, identifying extracted facial images with registered facial images, and quantifying stored photos that contain a registered face) *with '848 Patent* (Ex. 1001), 2:41-52 (describing "a recording and reproducing method . . . comprising: a first step of executing a face recognizing process for a photographed image based on the image information; a second step of setting an importance level of each chapter in accordance with a result of the face recognizing process for a VIP set by a user; and a third step of selectively reproducing each chapter having a relevant importance level, among importance levels of respective chapters."). Accordingly, a PHOSITA would have understood the two are analogous.

iii. Motivation to Combine Gallagher and Nakashima

49. As discussed in my overview of *Gallagher* above, the reference teaches that a person of interest (e.g., a VIP) may be registered by a user via the labeler 104. *Gallagher* (Ex. 1005), [0049]-[0054]. *Gallagher* expressly teaches that a VIP may be registered using image information stored in memory, i.e., images previously captured. *Id.* at [0049]. But *Gallagher* does not expressly contemplate allowing a user to register a VIP using a newly captured photo.

50. It was well known in the art that a person's face could be effectively registered by taking a new photo, rather than using existing image information. In fact, *Nakashima* teaches both options—registering a face from an image by either "individually photographing the face of each subject" or by utilizing a photograph that has been previously stored in the camera's memory such as in the HDD 75. *Nakashima* at [0123], [0147] (teaching that "[f]acial images to be stored in the registration table 75a . . . do not necessarily have to be images obtained based on image capturing signals from the CCD 123 . . . [but may also be] received from an external server via a communication port 107 or read out from the memory card 200."), [0148] (teaching that "[a]n original image obtained through photography is stored in the memory card 200 or the HDD 75."), [0123] (teaching the same).

51. For a number of reasons, a PHOSITA would have been motivated to supplement *Gallagher's* system such that VIPs could be registered either using

existing image information or by taking a new photo of the VIP pursuant to the teachings of *Nakashima*. For example, this modification would improve *Gallagher* in the same way allowing VIP registration via new photos benefits *Nakashima*. *Nakashima* teaches that "it is preferable that the faces are photographed at clear and appropriate sizes to allow detection of the facial regions by the face detection section 20a." *Id.* at [0145]. Taking a new photo with the specific goal of capturing a VIP's face furthers this goal of ensuring a VIP's face is clear and an appropriate size for the registration process. Namely, the photographer can ensure that the VIP's face is in focus, well-illuminated, centered, properly sized, etc.—all things that will facilitate an effective facial recognition process. Indeed, *Nakashima* even acknowledges that not all previously captured images are appropriate for the registration process and that, if a previously taken photograph is to be used to obtain a facial image for the purpose of registering a person, the selected photograph should contain a facial image that is photographed at an appropriate size and with appropriate clarity. *Id.* at [0147] (teaching that facial images to be stored in the registration table 75a don't just have to be based on images captured via the CCD (i.e., newly taken) but may come from images stored in memory or received from an external server as long as they contain faces photographed with appropriate clarity and size). Accordingly, a PHOSITA would have understood that *Nakashima's* registration mode that allows the VIP to be newly photographed provides the

important benefit of ensuring that the system is provided with a facial image of the VIP that facilitates effective facial recognition.

52. *Gallagher* is similarly concerned with capturing and storing the facial features of a VIP. *Gallagher* teaches that "local features 244 are quantitative descriptions of a person" and that a "person finder feature extractor 106 outputs one set of local features 244 . . . for each detected person." *Gallagher* (Ex. 1004), [0082]. *Gallagher* further teaches that "the local features 244 are based on the location of 82 feature points associated with specific facial features[.]" *Id.* Fig. 12D below illustrates facial feature points:

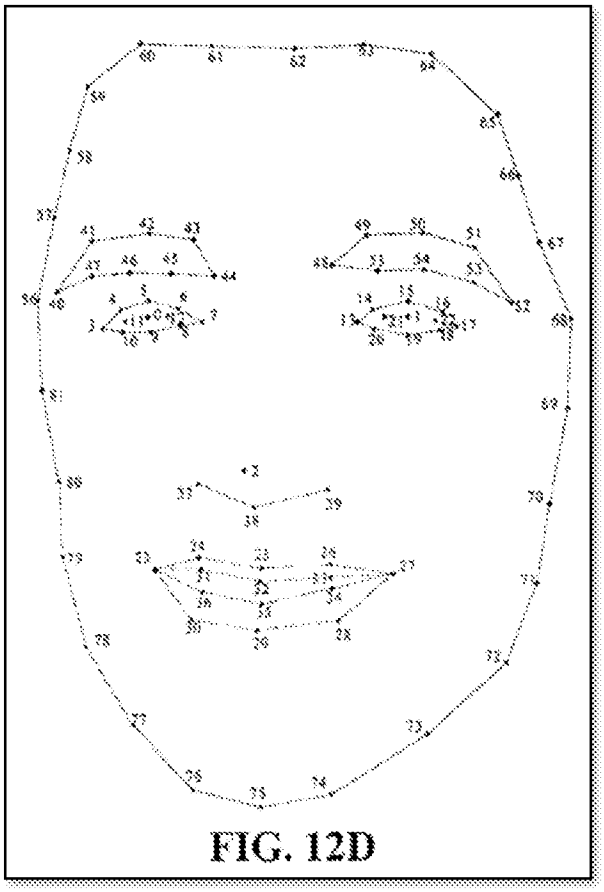


FIG. 12D

Id. at Fig. 12D, [0082] (describing the same). A PHOSITA would have understood that not all photographed images previously obtained and stored would contain views of photographed individuals that were sufficiently clear and properly sized so as to allow *Gallagher's* 82 feature points to be accurately extracted. A person's face could be partially blocked by objects, other faces, or dark shadows. Similarly, accessories such as hats or glasses could also obscure the necessary facial features that facial recognition would rely on to perform matching. *Gallagher* even teaches that detecting people in a photograph is difficult and that a person may not be

detected if they, for example, "hav[e] their back to the camera[] or a hand over the face." *Id.* at [0075]. Indeed, it was known in the art that many images are not effective for facial recognition and that centered and well-lit images should be used. For example, US 2005/0063566 to Beek et al. ("*Beek*") confirms that, for the purposes of facial recognition, it is optimal to have an image that contains a high quality image of a face. *Beek* is directed to a "face imaging system for the recording and/or automated identity confirmation, including a camera unit and a camera unit controller." *Beek* at Abstract. *Beek* teaches that "[c]urrent face recognition software algorithms suffer when the input images are poorly posed, poorly lit, or poorly cropped[,]" and that "improved image quality significantly improves face recognition performance." *Id.* at [0019]. *Beek* teaches that its image capturing software analyses data received from the video camera "to determine precisely when to capture a face image so as to obtain high quality, well lit, frontal face images of the target." *Id.* at [0079], [0080] (teaching that once a face image is located a spot metering system is adjusted relative to the size of and centered on the face image resulting in "a captured face image that is correctly exposed and more suitable for image analysis and facial recognition and comparison."). Given *Gallagher's* goal of creating detailed facial maps as depicted in Fig. 2D, a PHOSITA would have understood that *Gallagher* would benefit from having a centered, bright, and clear images of a VIP available for the registration process. Per *Nakashima's* teachings,

allowing users to take new photos of VIPs during the registration process furthers this goal, ensuring the system has an image from which many facial feature points could be easily and accurately ascertained during the facial recognition processing. Accordingly, allowing VIP registration via newly captured photos as taught by *Nakashima* would have improved *Gallagher's* in the same way it benefits *Nakashima's* system, providing an image that facilitates more effective facial recognition.

53. A PHOSITA would also have understood that such a modification to *Gallagher* would have been straightforward and only required some minor programing changes to allow for the capturing of a new photograph as part of the process of registering a person as a person of interest (i.e., a VIP). Furthermore, such a modification would have been well within the capabilities of a PHOSITA. *Gallagher* already contains the necessary structure for taking new photographs, teaching a digital camera phone that contains a lens, image sensor array along with a CMOS image sensor, analog-to-digital converter, a digital processor controlled by firmware, and memory to store digital image files. *Gallagher* (Ex. 1005), [0036]-[0040]. This hardware is illustrated in Fig. 1 below:

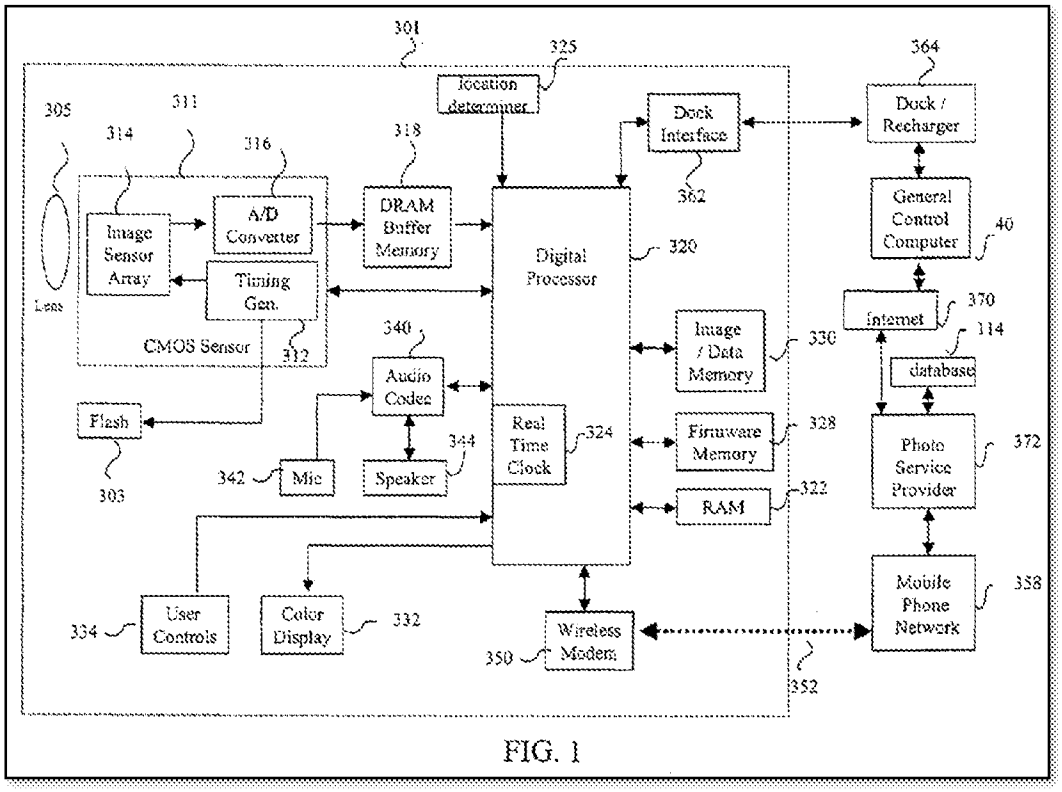


FIG. 1

Id. at Fig. 1. *Gallagher* also teaches that the camera phone has a "still image mode" in which the digital processor 320 " . . .produce[s] rendered sRGB image data[,]" which is then "JPEG compressed and stored as a JPEG image file in the image/data memory 330." *Id.* at [0041]. Furthermore, similar to *Nakashima*, *Gallagher* also teaches a display for displaying newly taken photographs (e.g., LCD image display 332) and a method by which a user can label a person contained in photographs (e.g., labeler 104). Compare *id.* at [0043], [0049], *with Nakashima* (Ex. 1006), [0145] (teaching that a newly taken photograph is displayed on a liquid crystal panel and a user can input the "names" of a subject using a graphical user interface). Because *Gallagher* already has all the necessary hardware and software components required

for taking a new photograph, and allowing a user to provide a label for a person of interest, a PHOSITA would have only needed to implement minimal reprograming to support registering VIPs using newly captured photos.

D. Opinions Supporting the Proposed Combination of *Gallagher* and *Nakashima*

1. Claim 8(c): capture a photograph and generate image information of the photograph;

54. *Gallagher* teaches capturing a photograph and generating image information of the photograph. Specifically, *Gallagher* teaches a "digital camera phone 301 that includes a lens 305 that focuses light from a scene . . . onto an image sensor array 314 of a CMOS image sensor 311." *Gallagher* at [0037]. *Gallagher* then teaches that "[t]he analog output signals from the image sensor array 314 are amplified and converted to digital data by the analog-to-digital (A/D) converter circuit 316 on the CMOS image sensor 311[,]" and the digital data is then "stored in a DRAM buffer memory 318 and subsequently processed by a digital processor 320 controlled by the firmware stored in firmware memory 328 . . ." *Id.* at [0039]. "These processed digital image files are stored in the image/data memory 330." *Id.* at [0040]. More specifically, *Gallagher* teaches that when the digital camera phone is in a "still image mode, the digital processor 320 performs color interpolation followed by color and tone correction, in order to produce rendered sRGB image data" which is then "JPEG compressed and stored as a JPEG image file in the image/data memory

330." *Id.* Accordingly, *Gallagher* explicitly teaches that the digital camera phone captures a photograph and generates digital image information of that photograph at least because *Gallagher* teaches the image array sensor outputs analog signals representing a captured scene (i.e., a captured photograph) which are then converted to digital, processed, and ultimately stored in memory (specifically as a JPEG image file if the image was captured in a still image mode).

55. Claim 8 requires that instructions executed by the processor are what causes the processor to capture a photograph and store the image data of a captured photograph in memory. While *Gallagher* does not expressly disclose that its digital processor 320 is executing instructions to cause the CMOS sensor to capture a photograph and further store the image data of that photograph in memory, a PHOSITA would have understood that the digital processor of *Gallagher* would have done so. As depicted in Figure 1 of *Gallagher* (reproduced below) the digital camera phone 301 contains only one processor (i.e., digital processor 320). Furthermore, Fig. 1 depicts a bidirectional connection between the digital processor 320 and the CMOS sensor 311:

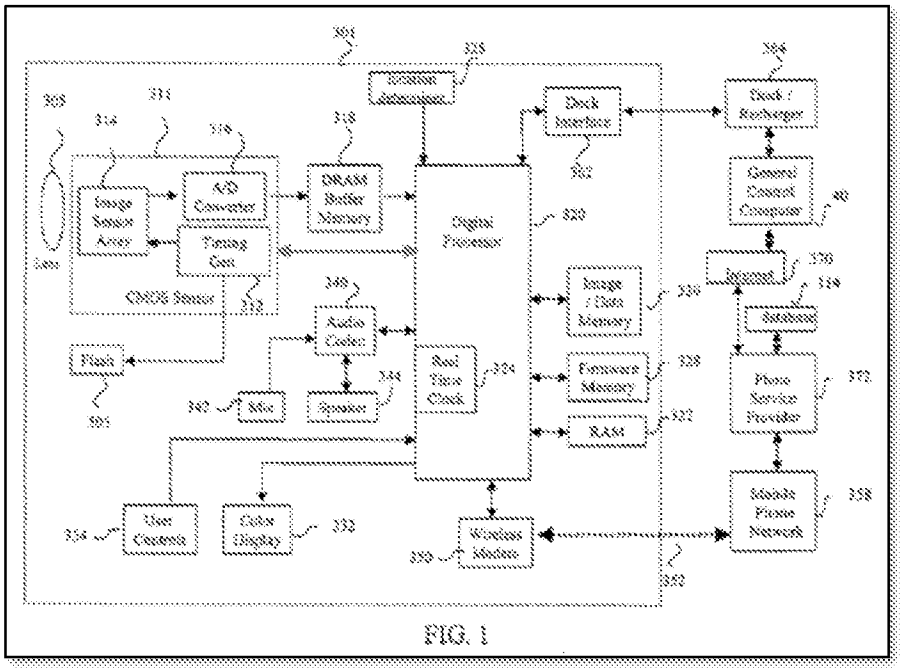


FIG. 1

Id. at Fig. 1 (with the bidirectional connection annotated in red). A PHOSITA would have understood that the bidirectional connection between the processor 320 and the CMOS sensor 311 would have allowed the processor to instruct the CMOS sensor to capture an image. *Id.* at [0037].

56. *Gallagher* explicitly teaches that the "digital processor 320 [is] controlled by the firmware stored in firmware memory 328, which can be flash EPROM memory." *Id.* at [0039]. A PHOSITA would have understood that this firmware stored in the firmware memory 328 (which is also has a bidirectional connection to the digital processor 320) is accessed by digital processor 320 and directs its functionality, including when it instructs the CMOS sensor to capture a photograph. Furthermore, because *Gallagher* does not depict or describe any other

processors or controllers other than digital processor 320 as being contained in the digital camera 301, a PHOSITA would have understood that digital processor 320 executing the firmware stored in memory 328 as being the processor that controlled all functions of the digital camera, including the capturing of a photograph.

2. Claim 8(e): execute a face-recognizing process on the image information to recognize a face;

57. *Gallagher* teaches that a person detector 110 includes face detector 270, which is used to detect the faces in an image. Fig. 12A (reproduced below) shows he person detector 110 containing the face detector 270:

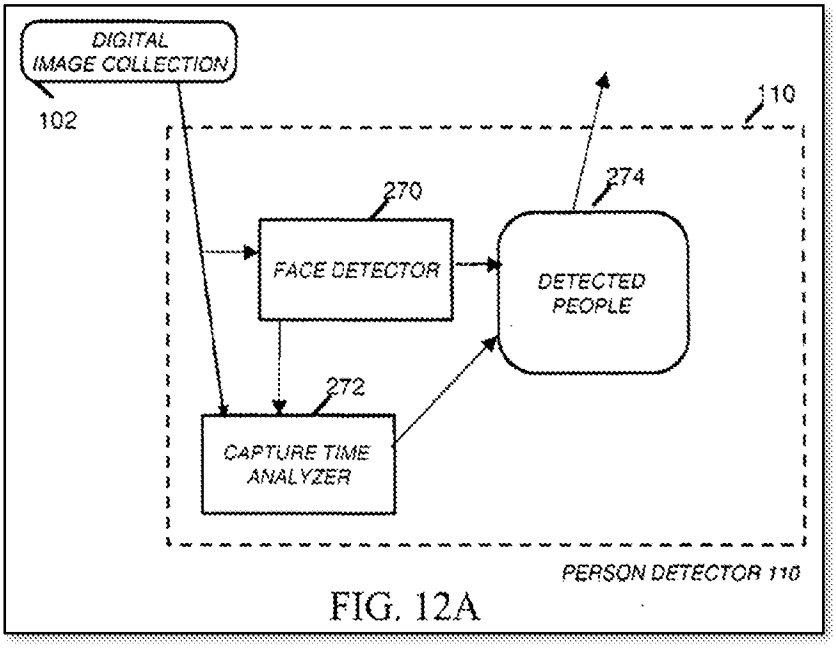


FIG. 12A

Gallagher at Fig. 12a, [0074] (teaching that "[p]referabl[y], the person detector 110 implements a face detection algorithm."), [0075] (teaching that "[t]he images and videos of the digital image collection 102 are analyzed by a face detector 270, such

as the aforementioned face detector by Jones and Viola."). *Gallagher* goes on to explain that face detectors were very well known in the art. *Id.* at [0074]. Further, *Gallagher* expressly notes that face recognition, as known in the art, is implemented as **software**. *Id.* at [0006].

58. Accordingly, a PHOSITA would have understood that the face detection method taught by *Gallagher* is software-based. And, as discussed above, digital processor 320 controls all software-based functionality in the *Gallagher* device, implementing instructions stored in firmware memory 328. Accordingly, the facial recognition described by *Gallagher* is a result of digital processor 320 executing instructions.

3. Claim 8(f-j): reproducing recorded images, registering a specific person, and selectively reproducing image information containing a registered person

59. *Gallagher* teaches generating a digital image subset 112, which is displayed on display 332 for review by the user. *Id.* at [0048]. As discussed above, digital images that are taken by the digital camera are stored in the image/data memory 330. *See* ¶ 54. A PHOSITA would have understood that the digital image subset 112 is a specific subset of the photographs stored in the image/data memory 330 (i.e., recorded in the recording medium) which are displayed on a display for the user to view (i.e., reproduced). Additionally, as set forth above in my overview of *Gallagher*, reproducing digital image subset 112 is a process that follows

registering a VIP. Indeed, the point of creating this subset is to identify image information containing a registered VIP. A PHOSITA would have understood that both the image reproduction and VIP registration processes, as with all software-based functions in *Gallagher*, are controller by digital processor 320, executing instructions stored in firmware memory 328. This also applies to the proposed combination of *Gallagher* and *Nakashima*—both modes of registering a VIP in the proposed combination are controlled by digital processor 320, executing said instructions.

4. ***Claim 10: The recording and reproducing apparatus according to claim 8, wherein the image information to be selectively reproduced is the image information having a relatively high importance level picked out among the image information recorded in the recording medium which includes the registered specific person.***

60. As I explained above *Gallagher* teaches an adjustable value T_0 that allows the user to customize the selective reproduction that produces image collection subset 112. *See* ¶ 42. Ranging from '0' to '1', as the value of T_0 increases, "the digital image collection subset 112 contains fewer images or videos, but the likelihood that the images and videos in the digital image collection subset 112 actually do contain the person of interest increases." *Gallagher* at [0146]. Likewise, a PHOSITA would have understood the inverse to be true as well—as the value of T_0 decreases, the number of digital images reproduced also increases, but the

system's confidence that every image in subset 112 contains the person of interest decreases. Accordingly, the adjustable T_0 value allows a user to determine the quantity of images returned in subset 112.

61. Gallagher's adjustable T_0 value also determines how qualitatively close an analyzed imaged must be to the registered VIP's stored facial image to be included in subset 112. *Gallagher* teaches that, in order to determine the digital image subset 112, "the person identifier will access features from the features extractor 106 and associated labels stored in the database 114 . . ." *Id.* at [0064]. The feature extractor 106 is what determines "features related to people from images and videos in the digital image collection." *Id.* at [0066]. The feature extractor 106 determines "two types of features related to people"—local features and global features. *Id.* at [0082]. "Local features are features directly relating to the appearance of a person in an image or video." *Id.* at [0047], [0081] (teaching that local features may be a person's eyes, nose mouth etc.), [0082] (teaching that "[a] visual representation of the local features points for an image of a face is shown in FIG. 12D as an illustration."). Global features are "independent of the identity or position of the individual in an image or video." *Id.* at [0066], [0066]-[0073] (providing examples of global features such as identity of the photographer, image/video file name, image/video capture time, capture condition metadata, scene environment information, and geographical location).

62. Using the local and global features, *Gallagher's* system analyzes a digital image collection and produces "subset 112[,which] is the collection of images and video having an associated proposed label with a probability that exceed a threshold T_0, where T_0 ranges from $0<=T_0<=1.0$. Id. at [0138]. Accordingly, a PHOSITA would have understood that the user defined value for T_0 dictates how close a match is required to include a particular image in subset 112. Because the process considers local features (i.e., facial features of a registered VIP) in arriving at a confidence level, the closer a match to a registered VIP's stored facial features, the higher the confidence level that the analyzed image includes the VIP. Thus, a higher T_0 value not only produced a quantitatively smaller subset 112, but also ensures that subset 112 consists of the highest quality matches (i.e., the images most likely to contain the registered VIP because they match more facial points than other images). A PHOSITA would have understood that qualitatively limiting the images returned to those that contain a person having the closest match to the registered VIP was known in the art at the time. For example, *Nakashima* teaches that its "image capturing apparatus further comprises a main subject determination section which determines, based on photographed images and an extracted facial image corresponding to the identification information of a selected subject, which photographed image features the subject as a main subject." *Nakashima* (Ex. 1006), [0026]. In sum, *Gallagher's* adjustable T_0 value allows a user to both quantitatively

and qualitatively adjust the images containing a registered VIP that are returned in subset 112.

5. Claim 11(a): control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,

63. As discussed above with respect to Claim 10, *Gallagher* teaches a user-adjustable T_0 value that will control the number and quality of images that will be reproduced and displayed in the image subset 112. *See* ¶¶ 60-62. Any value entered by the user, from '0' to '1,' impacts subset 112, and could be considered distinct "modes." For example, taking the two obvious extremes, a value of '1' is a mode that produces the fewest number of images with the highest likelihood said images contain the registered VIP, and a value of '0' is a mode that produces the greatest number of images with the lowest likelihood that all the images contain the registered VIP.

64. Additionally, a PHOSITA would have understood that many benefits could be realized by providing users with a set of discrete options for the T_0 value (e.g., low, medium, high), rather than the unlimited range of values that *Gallagher* expressly discusses (i.e., any value between '0' and '1'). For example, providing users with discrete settings simplifies the product operation and avoids unnecessary frustrations that can arise from overwhelming users with too many settings. A PHOSITA would have understood that an end user would have had to perform fairly

in-depth experimentation and analysis in order to gain an understanding of the differences between the individual values that could be entered for the variable T_0. If the options were instead limited to three discrete choices, a user could gain a fairly quick understanding of differences. *See* ¶ 63. Indeed, it was a well-established convention at the time of the '848 Patent to provide pre-established settings (e.g., presets) for a variety of adjustments in consumer electronics. For example, digital cameras at the time provided multiple "shooting modes" that automatically configured settings such as aperture and shutter speed to accommodate a set of potential photography situations (e.g., portrait, landscape, sport, etc.). *See, e.g.*, *Olympus E-510 Manual* (Ex. 10XX), 18 (explaining that auto shooting modes configure camera settings based on a user-selected mode and also describing "advanced shooting modes" that provide more adjustability for more advanced users). For most users, these presets provide all the adjustment necessary to accommodate the shooting scenarios they experience, and they provide a much better user experience than forcing users to manually adjust each individual setting to arrive at an appropriate shooting state. Similarly, providing three discrete settings for *Gallagher's* variable T_0 would provide an improved user experience for most, if not all, users. A T_0=0 mode would accommodate a user's desire to ensure that every image containing the VIP is presented, acknowledging that some images will include false positives for the VIP. A T_0=1 mode would accommodate a user's desire to see

only images containing the VIP, acknowledging that subset 112 will miss some images containing the VIP in this mode. Splitting the difference, a T_0=0.5 mode allows the user to select a happy medium between those extreme scenarios. A PHOSITA would have understood that, given the purpose of the T_0 variable, it is unlikely that a user would require or even desire the ability to further fine tune T_0 beyond these three modes. Like the digital camera presets, televisions at the time also included preset picture modes that allowed users to select one of a few options (e.g., dynamic mode for a bright and sharp picture, standard mode for general viewing, and movie mode for watching movies in a dimmed room), rather than manually adjust each individual setting. *See, e.g., Samsung Plasma Manual* (Ex. 10XX), 29-30 (describing three modes and noting manual adjustments are also available). Based on the well-established convention of providing users with discrete settings, either in addition to or in place of full manual control, a PHOSITA would have understood the benefits of implementing Gallagher's T_0 setting as three discrete presets (e.g., high confidence, medium confidence, low confidence), rather than requiring the user to enter any value between '0' and '1.'

65. Additionally, utilizing discrete values would have simplified the product's design and testing. Rather than testing every possible value a user may enter for variable T_0, the manufacturer need only test the specific discrete options presented to the user (e.g., 0, .5, and 1).

6. Claim 11(b): wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and

66. As I have discussed above in ¶¶ 63-65, *Gallagher's* T_0 value constitutes multiple modes as claimed—either as a user-entered value (with each distinct value being a distinct mode) or if implemented as a set of discrete options. In either case, a change in the T_0 value necessarily results in a change the time required for reproducing the image information. Namely, as explained above, as T_0 increases, the number of images reproduced in subset 112 decreases. For the simple reason that reproducing each individual image requires some amount of processing time, reproducing a larger number of images takes more time than reproducing a smaller number of images. Accordingly, whether the modes are individual values of T_0 entered by the user (confined only by the requirement that the value be between '0' and '1') or one of multiple discrete values pre-established through programming, the reproducing time for reproducing the image information is shorter in a high T_0 mode than the reproducing time in a lower T_0 mode.

7. *Claim 11(c): the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.*

67. As I discussed above with respect to Claim 11(b), a PHOSITA would have understood that the value of T_0 could take on at least three different user assigned values or modes (e.g., a low value T_0=0, a medium value T_0=0.5, and a high value T_0=1). *Gallagher* explicitly teaches with respect to the user provided value for the variable T_0 that, "[a]s the value increases, the digital image collection subset 112 contains fewer images or videos, but the likelihood that the images and videos in the digital image collection subset 112 actually do contain the person of interest increases." *Gallagher* at [0146]. A PHOSITA would have understood this teaching to mean that the lowest T_0 value produces the largest number of images, including those with a high likelihood of including the VIP as well as images with a lower likelihood of including the VIP. As T_0 increases, the images with a lower likelihood of including the VIP are removed from subset 112. Accordingly, if T_0=1 is the first reproducing mode, it would contain only those images highly likely to include the VIP. And, if T_0=0 is the second reproducing mode, it would include all the images of the first reproducing mode plus many additional images that are less likely to include the VIP than those included in the first reproducing mode.

8. ***Claim 13(j): secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and***

68. As I discussed above with reference to Claim 10, *Gallagher* teaches that the subset of images selectively reproduced is controlled by a user determined condition (i.e., T_0 value). Namely, the user may adjust the value of T_0 which will result in the altering the image subset reproduced both in quantity and quality.

69. *Gallagher* explicitly teaches that the user "adjust[s] the value of T_0 through the user interface." *Gallagher* at [0146]. A PHOSITA would have understood that this constitutes "an instruction by the user" in two senses. First, because the user is telling the system how it should operate, the user is "instructing" the system in accordance with the common usage of instructing. Second, because the user's selected T_0 value must be processed via software to be implemented during Gallagher's selective reproduction process, the user's T_0 value is an "instruction" to the system in the sense that it is process by software as an instruction.

IV. CONCLUSION

70. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the

like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Date: 12/23/2020

By: _____
Dr. Charles D. Creusere

Samsung - Exhibit 1004 - Page 457

Appendix A

VITA

CHARLES D. CREUSERE

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DISSERTATION TITLE

"Perfect Reconstruction Modulated Polyphase Filter Banks Using Reverse-Time Subfilters."

ACADEMIC TRAINING

1980-1985: University of California at Davis, B.S. in Electrical and Computer Engineering.

1989-1990: University of California at Santa Barbara, M.S. in Electrical and Computer Engineering.

1990-1993: University of California at Santa Barbara, Ph.D. in Electrical and Computer Engineering.

PROFESSIONAL EXPERIENCE

2010-Present Holder of the Frank Carden Endowed Chair in Telemetering & Telemcommunications and Full Professor. Current research interests include compressive sensing/sparse reconstruction for LIDAR and streaming sensor data as well as EEG brain analysis for audiovisual perceptual quality assessment and modeling.

October 2008 Selected for the International Foundation for Telemetering Endowed Professorship.

Jan. 2000-2008 Associate professor in the Klipsch School of Electrical & Computer Engineering. My teaching areas include digital signal processing, image processing, pattern classification, and source coding (signal compression). I have done past research in areas of image, video, and audio compression as well as feature vector extraction for pattern classification. Currently, my research interests include distributed compression, polarmetric image processing for scene analysis, and EEG waveform analysis and interpretation.

1993-1999: Researcher & Team Leader, Naval Air Warfare Center, China Lake. My research efforts have focused on high speed image and video compression technologies which offer unique capabilities such as robustness to transmission errors and regional localization. My team (2 other people) and I have implemented a real-time (3 to 15 frames/second with 240x512 frames)

320C80-based system which uses a wavelet transform along with embedded coding techniques to compress a video input and stream it through the Internet via TCP/IP protocols. Our recent research focus has been to add more intelligence to the encoder so that the space-frequency information in the image that is most useful for image analysis is received with the highest fidelity. While most of my recent research has been in the area of embedded compression, I am still very much interested in other applications of time/space-frequency decompositions and of multirate digital signal processing concepts in general.

1999, Spring Quarter: Instructor at the University of California at Santa Barbara. Taught graduate class in Multirate Digital Signal Processing, ECE 258B.

1990-1993: Research Assistant, Department of Electrical and Computer Engineering, University of California, Santa Barbara. Worked under Prof. S.K. Mitra on subband coding and multirate filter bank theory. Also implemented real-time filter banks on a Motorola 56001 digital signal processor.

1992: Summer Employee, AT&T Bell labs, Murray Hill, NJ. Developed and simulated new methods of extremely low bit rate video coding for video telephone applications.

1985-1989: Design Engineer, Naval Weapons Center, China Lake. Designed, built, and tested the guidance electronics for the Laser Guided Training Round. This project included mixed analog and digital circuit design as well as the programming of an embedded DSP. Also developed software for an advanced video processor and studied ground target tracking.

FUNDED RESEARCH

• (2000) Office of Naval Research, *Compression of Digital Elevation Maps Using Non-linear Wavelets*, 2000-2003, $94K

• (2001) Sandia National Labs, *Intelligent Compression for Remote Sensing*, 2001-2003, $70K.

• (2002) National Science Foundation (Early Career Grant), *Efficient Audio Compression with Perceptually Embedded Scalability*, 2002-2007, $350K.

• (2004) National Geospatial-Intelligence Agency, *Passive Polarimetric Imagery Classification Study*, 2004-2006, $160K (joint with Dr. David Voelz).

• (2005) Los Alamos National Laboratories, *Signal Detection via Adapted Filter Banks and Geometric Dimensionality Reduction*, 2005-2006, $15K (unburdened).

• (2006) Los Alamos National Laboratories, *Signal Detection via Adapted Filter Banks and Geometric Dimensionality Reduction*, 2006-2007, $50K (unburdened).

• (2006) National Geospatial-Intelligence Agency, *Exploiting Polarization in Imaging Systems*, 2006-2009, $304K (joint with Dr. David Voelz).

• (2006) Army Research Office, *Distributed Source Coding Using Bitstream-based Detection and Classification*, 2006-2009, $326K.

• (2006) DARPA (Subcontract from LANL), *ADAM Project*, 2006-2007, $104K (joint with Dr. Joe Lakey and Dr. Jaime Ramirez)

• (2009) NMSU IRG, *Perceptual audio quality evaluation by direct measurement of human brain responses*, 2009-2010, $39K (joint with Dr. Jim Kroger, Psychology)

• (2011) National Science Foundation, *CIF:Medium:Assessment and modeling of temporal variation in perceived audio and video quality using direct brainwave measurement*, 2011-2015, $917K (lead PI with Dr. Jim Kroger and Dr. Joerg Kliewer as co-PIs)

• (2011) NASA EPSCOR, *Proximity Operations for Near Earth Asteroid Exploration,* 2011-2014, $750K (co-PI, with Dr. Eric Butcher (lead), others)

• (2012) National Geospatial Intelligence Agency (NGA), *Pulse Complexity Based LIDAR Scene Modeling for Sparse Reconstruction and Super-Resolution*, 2012-2013 (plus 3 1 year options), $150K ($75K/option year), co-PI Dr. David Voelz.

• (2018) Airforce Research Lab (AFRL), Software Radio Design in LabView FPGA, 2018-2019, $140K.

OTHER DISTINCTIONS

- Awarded the International Foundation for Telemetering Professorship, October 2008.
- Received an educational fellowship from the Department of Defense, 1989-1992.
- Certificate of Merit for the outstanding technical paper awarded at the AIAA Missile Sciences Conference for the paper "Automatic target recognition directed image compression," Nov. 1998.
- Patent (classified) titled, "Microcontroller-Based Laser Pulse Decoder," awarded 1991.
- Patent titled "Parallel digital image compression system which exploits zerotree redundancies in wavelet coefficients," Patent Number 6,148,111.
- Patent titled "Efficient embedded image and video compression using lifted wavelets," Number: 6,466,698, granted October 15, 2002.
- Associate editor for IEEE Trans. on Image Processing, 2002-2005, 2010-2014
- Associate editor for IEEE Trans. on Multimedia , 2008-2013.
- Guest Editor, "Issue on Advances in Hyperspectral Data Processing and Analysis", IEEE Journal of Selected Topics in Signal Processing, Vol. 5, Numbers: 5 & 6, August-September 2015,
- Co-general chair, IEEE Digital Signal Processing Workshop, August 2004, Taos, NM.
- Co-technical chair for the 2012 and 2014 Southwest Symposium on Image Analysis and Interpretation.
- Student Paper Contest Chair, 40th Asilomar Conf. on Signals, Systems, and Computers, October 2006.
- Organized special session entitled "Applications of Multirate DSP" at the 40th Asilomar Conf. on Signals, Systems, and Computers, October 2006.

- Member of technical program committees for the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), the IEEE International Conference on Image Processing (ICIP), and the IEEE Data Compression Conference (DCC).
- Senior Area Editor, IEEE Transactions on Image Processing, March 2016 to present.

CONSULTING ACTIVITIES

- Video compression systems (technology consultant), Abba Tech, Albuquerque, NM, 2000.

- Expert witness in laser rangefinding technology, Asia Optical Inc. (through NY law firm of Osterlenk, Faber, Gerb & Soffen), Case: LTI versus Nikon/AOI, July 2001-2003. Case went to trial/ testified in court.

- Technical expert for defense (Evaluated expired PD patent and wrote Dec. demonstrating Dell could not have infringed, case was dropped); Case: Princeton Digital v. Dell, 2014-2015, case dismissed June 2015, **no deposition**.
- Technical expert for defense; Noninfrigement & IPR (6,597,812), Real-time v. SAP, 1/2016-6/2016, **2 depositions (IPR)**.
- Technical expert for defense; IPRs (7,378,992 & 7,415,530), Real-time v. Riverbed, 2/2016-present, **1 deposition**.
- Technical expert for defense; IPRs (8,643,513, 7,378,992, 7,161,506, & 9,054,728), Real-time v.
- Dell, 2/2016-7/2018, **2 depositions**.
- Technical expert for defense; Noninfringement, Real-time v. HP Enterprises, 4/2016-10/2018, **not deposed**.
- Technical expert for defense; IPR (7,358,867, 7,161,506, & 9,054,728), Real-time v. Teradata
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- Technical expert for defense; IPRs (8,643,513 & 7,378,992), Real-time v. Veritas 12/2016-2018, **no additional deposition**
- Technical expert for defense; IPRs (7,151,916, 7,075,917; 6,304,612) , Uniloc LLC v. Apple, 2018-2019, **not deposed**.
- Technical expert for defense; Noninfringement, Realtime Adaptive Systems v. YouTube/Google, 2018-present, **1 deposition**.
- Technical expert for defense; IPR (7,558,730) , AVRS v. Apple, 2019-2020, **2 depositions**.
- Technical expert for defense; IPR (10,129,590) , Maxell v. Apple, 2019-2020, Oct. 2020-present.
- Nokia Techs. Oy v. Lenovo (Shanghai) Elects. Tech. Co. Ltd. et al., No. 5:19-cv-427 (E.D.N.C.)
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5. **C.D. Creusere**: "Applications of multirate digital signal processing to communications systems," NATO/RTA lecture series 216 on *Applications of M*athematical *Signal Processing Techniques to Mission Systems*, presented in Paris, France; Cologne, Germany; and Monterey, CA, November 1999.

6. **C.D. Creusere**, "Object detection and recognition in compressed video," invited presentation and white paper for the Motion Imagery Workshop, sponsored by the National Imagery and Mapping Agency (NIMA) and the National Science Foundation (NSF).

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8. **C.D. Creusere**, "Compressing Digital Elevation Maps for Efficient Search and Retrieval," presented at the Office of Naval Research Workshop on Image Processing, Minneapolis, MN, May 2003.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	Mari Yoshido
Filer:	Jennifer C. Bailey/Chalynda Giles
Attorney Docket Number:	2638-19.06

Filed as Large Entity

Filing Fees for ex parte reexam

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
EX PARTE REEXAMINATION (1.510(A)) NON-STREAMLINED	1812	1	12600	12600
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**12600**

Electronic Acknowledgement Receipt

EFS ID:	41472259
Application Number:	90014641
International Application Number:	
Confirmation Number:	3601
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	Mari Yoshido
Customer Number:	118925
Filer:	Jennifer C. Bailey/Chalynda Giles
Filer Authorized By:	Jennifer C. Bailey
Attorney Docket Number:	2638-19.06
Receipt Date:	23-DEC-2020
Filing Date:	
Time Stamp:	16:39:08
Application Type:	Reexam (Third Party)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$12600
RAM confirmation Number	E2020BMG39362259
Deposit Account	506159
Authorized User	Chalynda Giles

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37 CFR 1.21 (Miscellaneous fees and charges)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.16 (National application filing, search, and examination fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Copy of patent for which reexamination is requested	EX1001_USP_10176848_Final.pdf	2222496 2fdacde4dad288e2a0cb34bbd649acac97a5b5c3	no	24
Warnings:					
Information:					
2	Non Patent Literature	EX1002_848_File_History_Final 1.pdf	19140833 65cc4deaf2eb77de82a1c554149fc310c92dfb35	no	595
Warnings:					
Information:					
3	Non Patent Literature	EX1004_368_File_History_Part 1.pdf	17813441 bd9596b8d2138b6f785c84e9fd659b6bb1bec363	no	382
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4	Non Patent Literature	EX1004_368_File_History_Part 2.pdf	17841659 e46daed7d4f797fd211d8d646d89fe8a2f419085	no	265
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5	Non Patent Literature	EX1004_368_File_History_Part 3.pdf	17837851 5507aa398c0f4e31f4f270e94fb6000ef7427dd9	no	273
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Information:					
6	Non Patent Literature	EX1004_368_File_History_Part 4.pdf	5115407 51cca8c11f849ef9122615f8574c43fbf6f3fc44	no	141
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Information:					

7	Other Reference-Patent/App/Search documents	EX1005_US20070098303A1_Gallagher_Final.pdf	2911756 4598fde37c8a551f2d12295dbf6c12506d89ab31	no	32
Warnings:					
Information:					
8	Other Reference-Patent/App/Search documents	EX1006_US20070019083A1_Nakashima_Final.pdf	2874490 609d58b6c899eaab376a849098a3795151a1d407	no	28
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9	Non Patent Literature	EX1008_Maxell_v_Apple_ITC_Complaint_Final.pdf	1749961 1388b88721e1677d63f3aa4d1679f2efe9c28fd4	no	74
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10	Other Reference-Patent/App/Search documents	EX1011_US20050063566_Beek_Final.pdf	2170966 306c25a7c7c92838d2c3aadddec61bd51ba3a3e4	no	18
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Information:					
11	Non Patent Literature	EX1012_Olympus_E510_User_Manual_Final.pdf	23462613 a7f13d648877c9939daee409892353e245c9ba77	no	141
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12	Non Patent Literature	EX1013_Samsung_Plasma_Display_Manual_Final.pdf	9031861 78132aaae969f4cfa4cbcdf4fc9605d8c549c137	no	81
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Information:					
13	Non Patent Literature	EX1007_Maxell_v_Apple_WDTEX_Complaint_Final.pdf	869483 9fb701e516b2a3ed63425d84a77fc6e7ca24c08e	no	33
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Information:					

14	Transmittal of New Application	01_Request_Reexamination_Transmittal.pdf	397908 c4738649c74d40d2de96408d5c98858bb6889561	no	4
Warnings:					
Information:					
15	Receipt of Orig. Ex Parte Request by Third Party	02_Reexamination_Application_848_Patent_Final.pdf	1135563 b15037ffbbabd2e7a9d7f399b4a6046d1cfde41f	no	47
Warnings:					
Information:					
16	Reexam - Info Disclosure Statement Filed by 3rd Party	03_Information_Disclosure_Statement.pdf	128812 ac66085bfaa7ed71815f26711944e11b1fb04383	no	2
Warnings:					
Information:					
17	Reexam - Affidavit/Decl/Exhibit Filed by 3rd Party	EX1003_Creusere_Dec_10176848_Final.pdf	3224156 b9d33295250496996l789e71bfa430efcfd3d66c	no	67
Warnings:					
Information:					
18	Fee Worksheet (SB06)	fee-info.pdf	30140 257795adc417bd301f7cdaae23b4a8c9bc973393	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	127959396		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

EXHIBIT 1001

US010176848B2

(12) **United States Patent**
Yoshida

(10) **Patent No.: US 10,176,848 B2**
(45) **Date of Patent: *Jan. 8, 2019**

(54) **RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF**

(71) Applicant: **Maxell, Ltd.**, Kyoto (JP)

(72) Inventor: **Mari Yoshida**, Yokohama (JP)

(73) Assignee: **MAXELL, LTD.**, Kyoto (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **14/478,020**

(22) Filed: **Sep. 5, 2014**

(65) **Prior Publication Data**

US 2014/0376879 A1 Dec. 25, 2014

Related U.S. Application Data

(63) Continuation of application No. 12/430,185, filed on Apr. 27, 2009, now Pat. No. 9,159,368.

(30) **Foreign Application Priority Data**

May 19, 2008 (JP) 2008-130678

(51) **Int. Cl.**
G11B 27/34 (2006.01)
G11B 27/034 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***G11B 27/34*** (2013.01); ***G06F 17/30852*** (2013.01); ***G06K 9/00*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC H04N 5/775; H04N 21/4348; G11B 27/34; G06K 9/00; G06K 9/00288;
(Continued)

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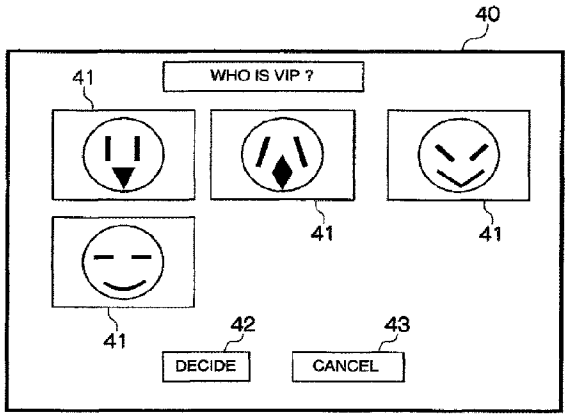
JP Office Action for Japanese Patent Application No. 2012-063504, dated Apr. 2, 2013.
(Continued)

Primary Examiner — Thai Q Tran
Assistant Examiner — Syed Hasan
(74) *Attorney, Agent, or Firm* Mattingly & Malur, PC

(57) **ABSTRACT**

In a recording and reproducing apparatus and a recording and reproducing method for the recording and reproducing apparatus for recording and reproducing image information on a scene obtained through photographing, relative to a predetermined first recording medium and being capable of setting one or more chapters to each scene, a face recognizing process is executed for a photographed image based on the image information, an importance level of each chapter is set in accordance with a result of the face recognizing process for a very important person (VIP) set by a user, and each chapter having a relevant importance level among importance levels of respective chapters is selectively reproduced. A user can therefore find an object chapter and scene quickly and easily.

20 Claims, 12 Drawing Sheets



(51) **Int. Cl.**

G11B 27/10	(2006.01)
G11B 27/28	(2006.01)
G11B 27/30	(2006.01)
G06K 9/00	(2006.01)
G06F 17/30	(2006.01)
H04N 5/77	(2006.01)
H04N 5/78	(2006.01)
H04N 5/85	(2006.01)
H04N 9/804	(2006.01)
H04N 5/781	(2006.01)
H04N 21/434	(2011.01)

(52) **U.S. Cl.**

CPC ***G06K 9/00288*** (2013.01); ***G06K 9/00711*** (2013.01); ***G11B 27/034*** (2013.01); ***G11B 27/105*** (2013.01); ***G11B 27/28*** (2013.01); ***G11B 27/30*** (2013.01); ***H04N 5/77*** (2013.01); ***H04N 5/772*** (2013.01); ***H04N 5/781*** (2013.01); ***H04N 5/85*** (2013.01); ***H04N 9/8042*** (2013.01); *G11B 2220/455* (2013.01); *H04N 21/4347* (2013.01)

(58) **Field of Classification Search**

CPC G06K 9/00711; G06K 9/00221; G06K 9/00228; G06F 3/00

USPC 386/230, 356; 348/239; 382/103, 118; 715/719

See application file for complete search history.

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JP Office Action for Japanese Patent Application No. 2012-063504, dated Oct. 30, 2012.

Japanese Office Action received in corresponding Japanese Application No. 2016-043206 dated Feb. 7, 2017.

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FIG. 1

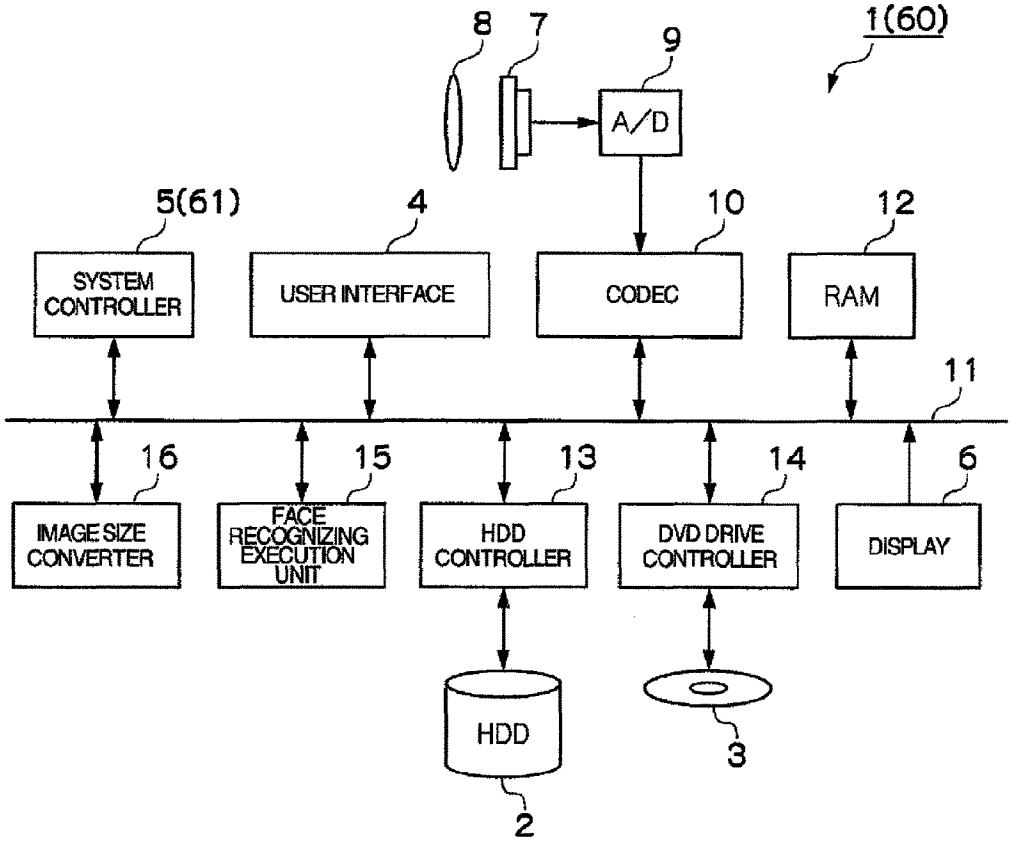

8
7
9
1(60)
A/D
5(61)
4
10
12
SYSTEM CONTROLLER
USER INTERFACE
CODEC
RAM
11
16
15
13
14
6
IMAGE SIZE CONVERTER
FACE RECOGNIZING EXECUTION UNIT
HDD CONTROLLER
DVD DRIVE CONTROLLER
DISPLAY
HDD
3
2

FIG. 2

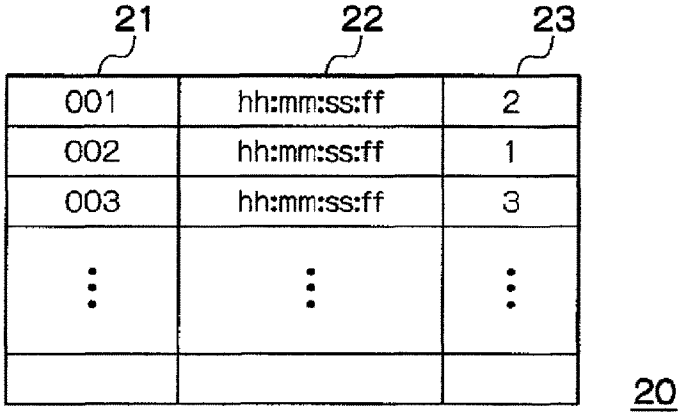

21
22
23
001
hh:mm:ss:ff
2
002
hh:mm:ss:ff
1
003
hh:mm:ss:ff
3
20

FIG. 3

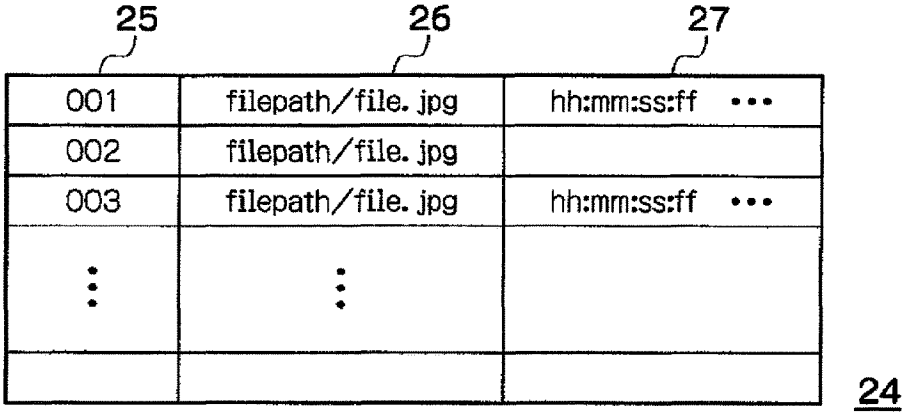

25
26
27
001
filepath/file. jpg
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002
filepath/file. jpg
003
filepath/file. jpg
hh:mm:ss:ff •••
24

FIG. 4

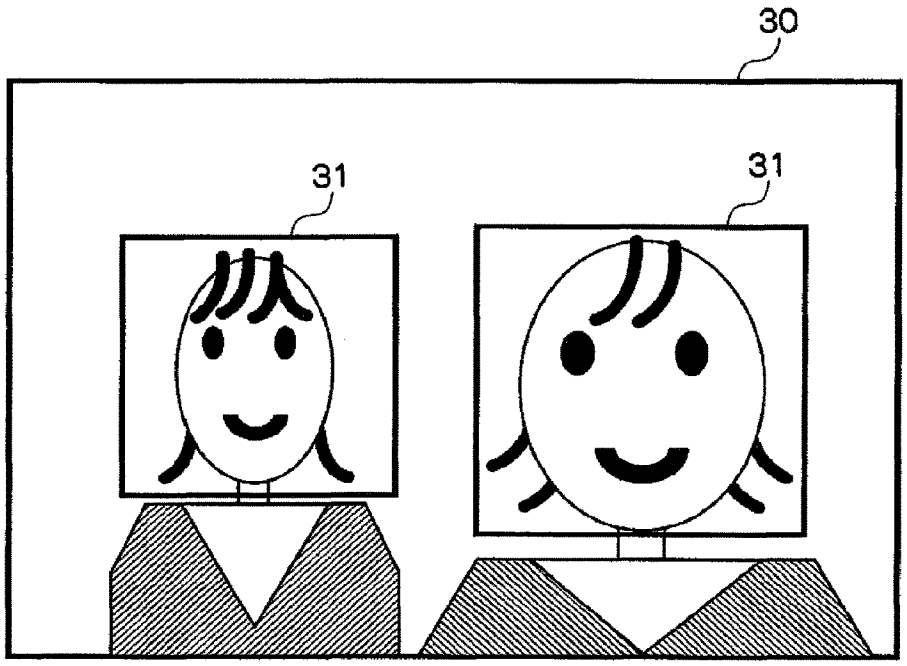


FIG. 5

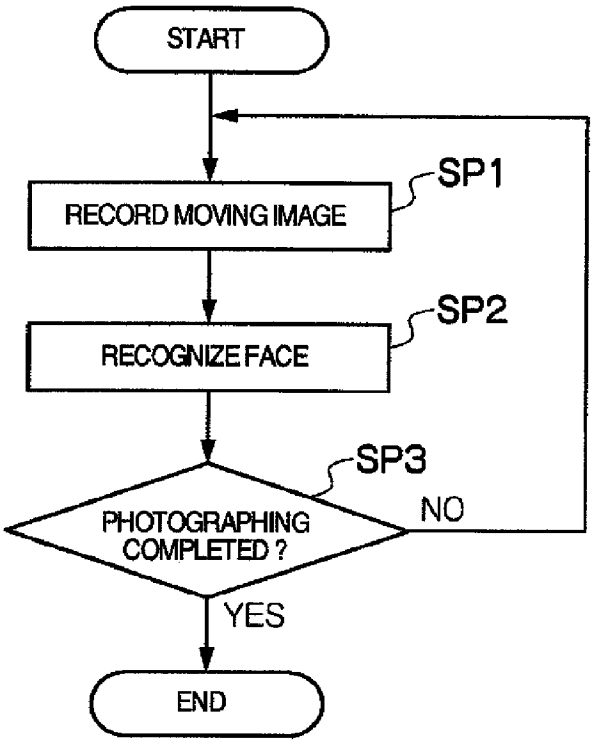

START
RECORD MOVING IMAGE
SP1
RECOGNIZE FACE
SP2
PHOTOGRAPHING COMPLETED ?
SP3
NO
YES
END

FIG. 6

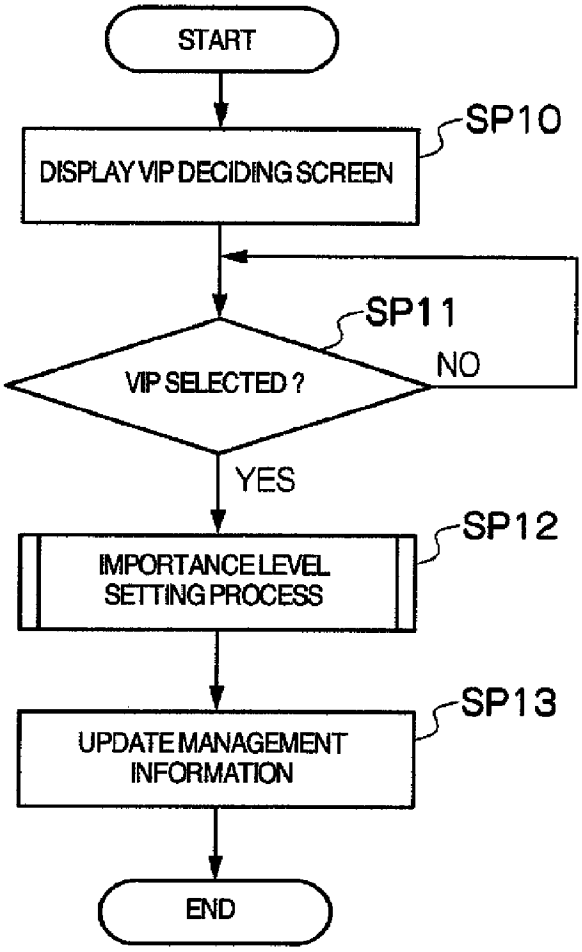

START
DISPLAY VIP DECIDING SCREEN
SP10
SP11
VIP SELECTED ?
NO
YES
IMPORTANCE LEVEL SETTING PROCESS
SP12
UPDATE MANAGEMENT INFORMATION
SP13
END

FIG. 7

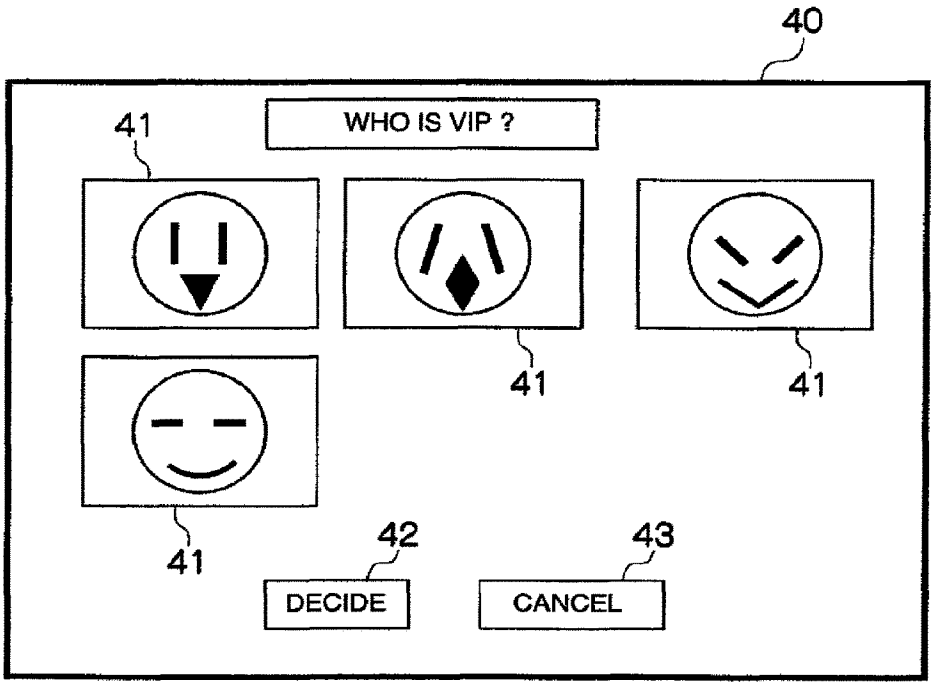


FIG. 8

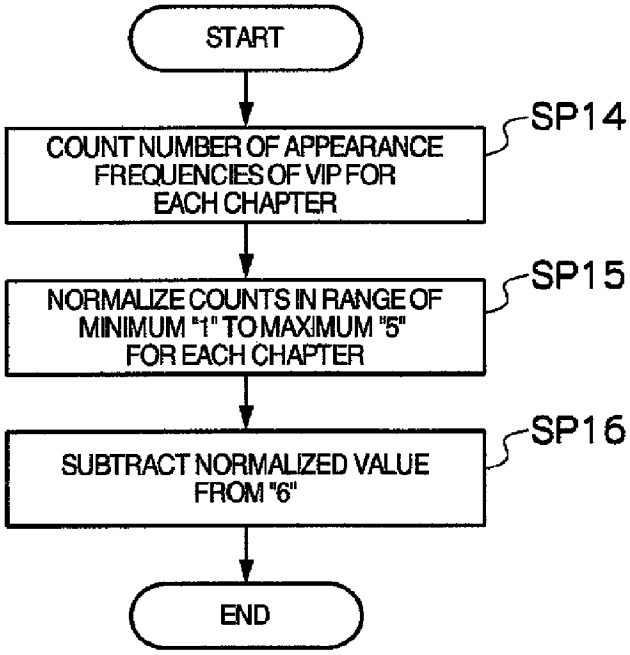


FIG. 9

CHAPTER ID	CHAPTER IMPORTANCE LEVEL
001	5
002	1
003	5
004	3
005	1
006	5
007	5
008	5
009	3

FIG. 10

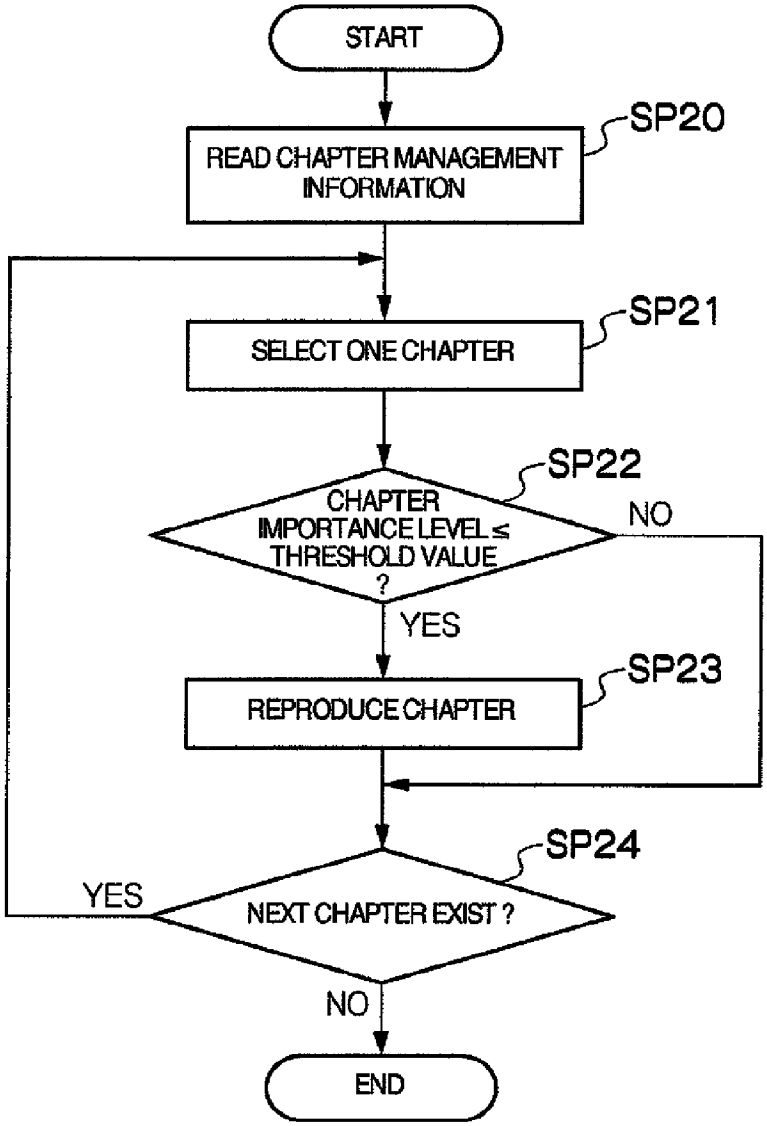

START
READ CHAPTER MANAGEMENT INFORMATION
SP20
SELECT ONE CHAPTER
SP21
CHAPTER IMPORTANCE LEVEL ≤ THRESHOLD VALUE ?
SP22
NO
YES
REPRODUCE CHAPTER
SP23
NEXT CHAPTER EXIST ?
SP24
YES
NO
END

FIG. 11

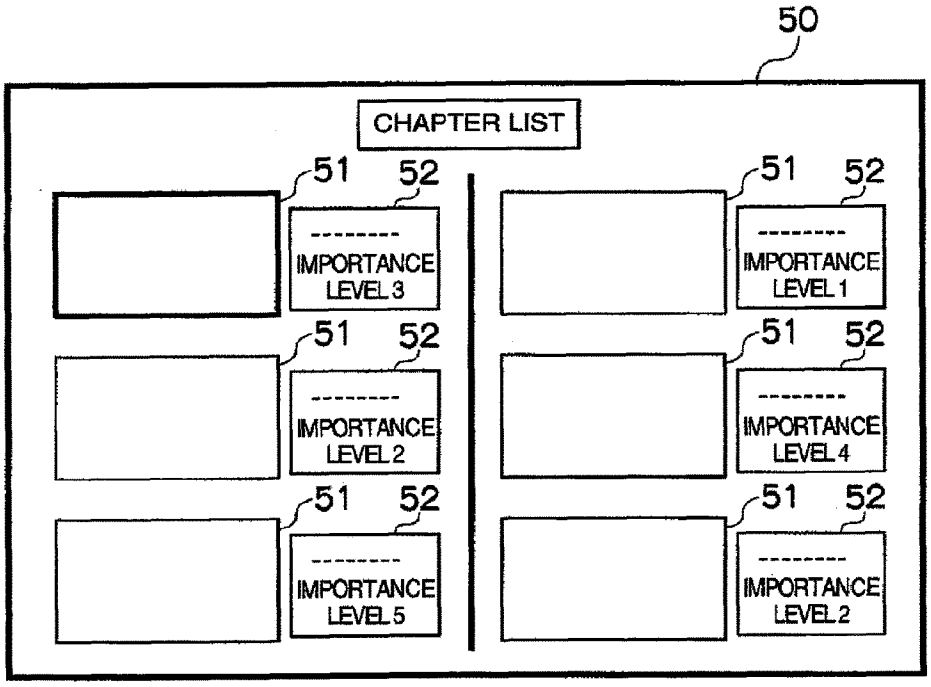

50
CHAPTER LIST
51
52
IMPORTANCE LEVEL 3
IMPORTANCE LEVEL 1
IMPORTANCE LEVEL 2
IMPORTANCE LEVEL 4
IMPORTANCE LEVEL 5
IMPORTANCE LEVEL 2

FIG. 12

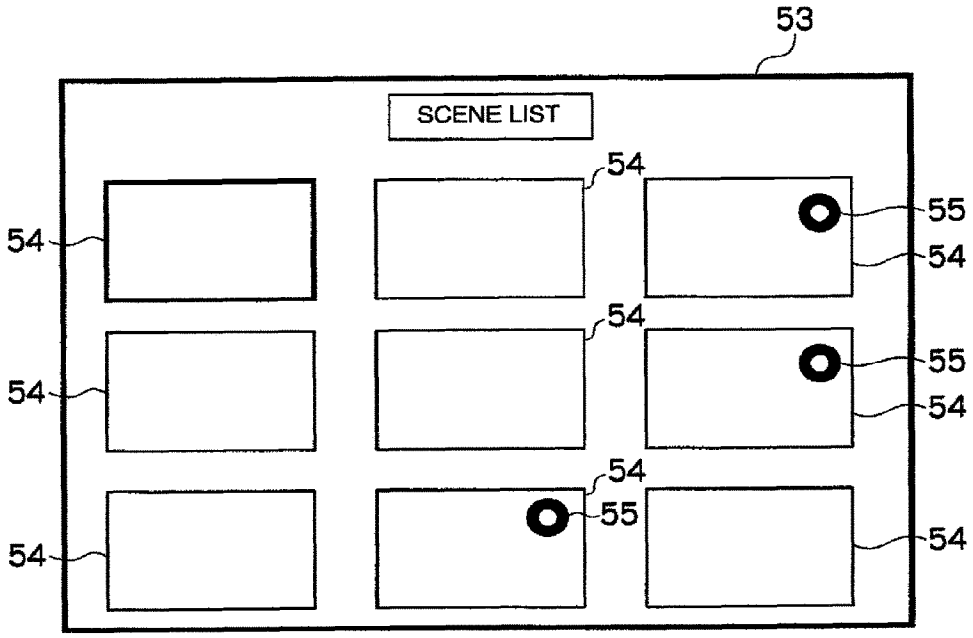


FIG. 13

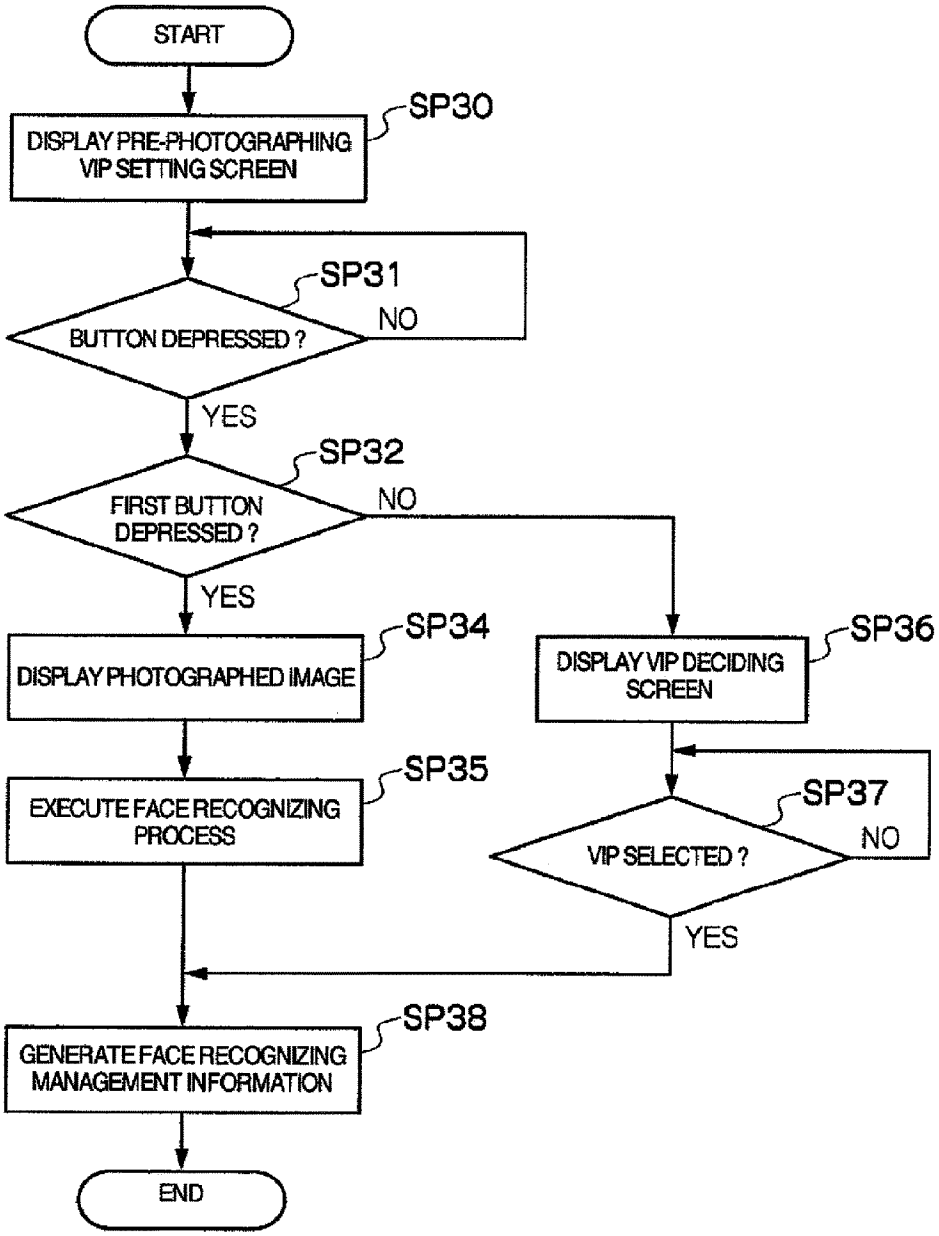

START
SP30
DISPLAY PRE-PHOTOGRAPHING VIP SETTING SCREEN
SP31
BUTTON DEPRESSED ?
NO
YES
SP32
FIRST BUTTON DEPRESSED ?
NO
YES
SP34
DISPLAY PHOTOGRAPHED IMAGE
SP36
DISPLAY VIP DECIDING SCREEN
SP35
EXECUTE FACE RECOGNIZING PROCESS
SP37
VIP SELECTED ?
NO
YES
SP38
GENERATE FACE RECOGNIZING MANAGEMENT INFORMATION
END

FIG. 14

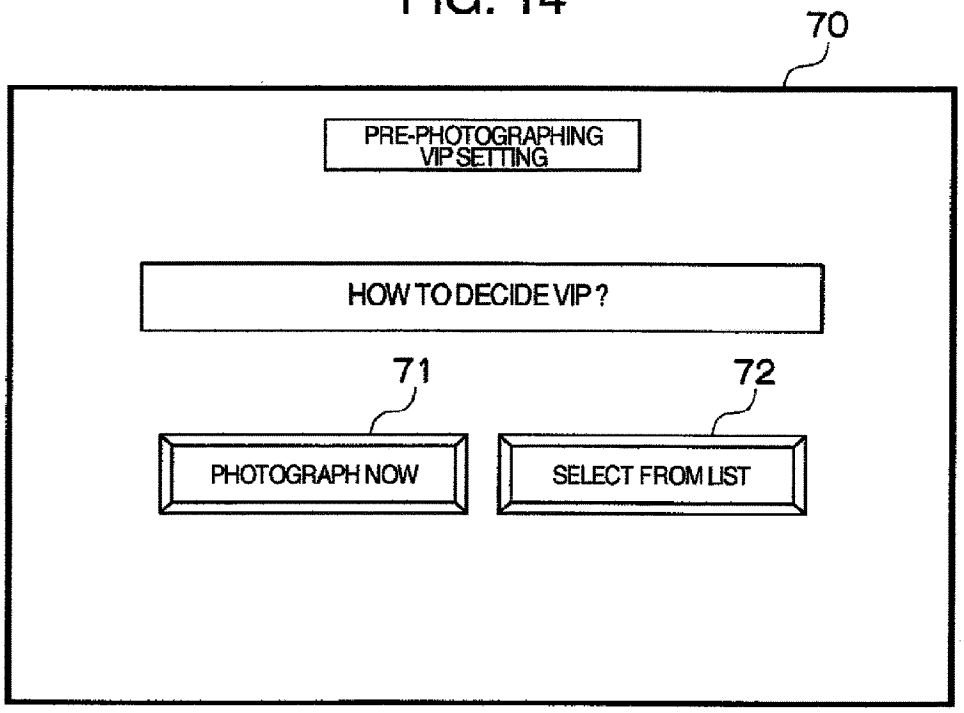
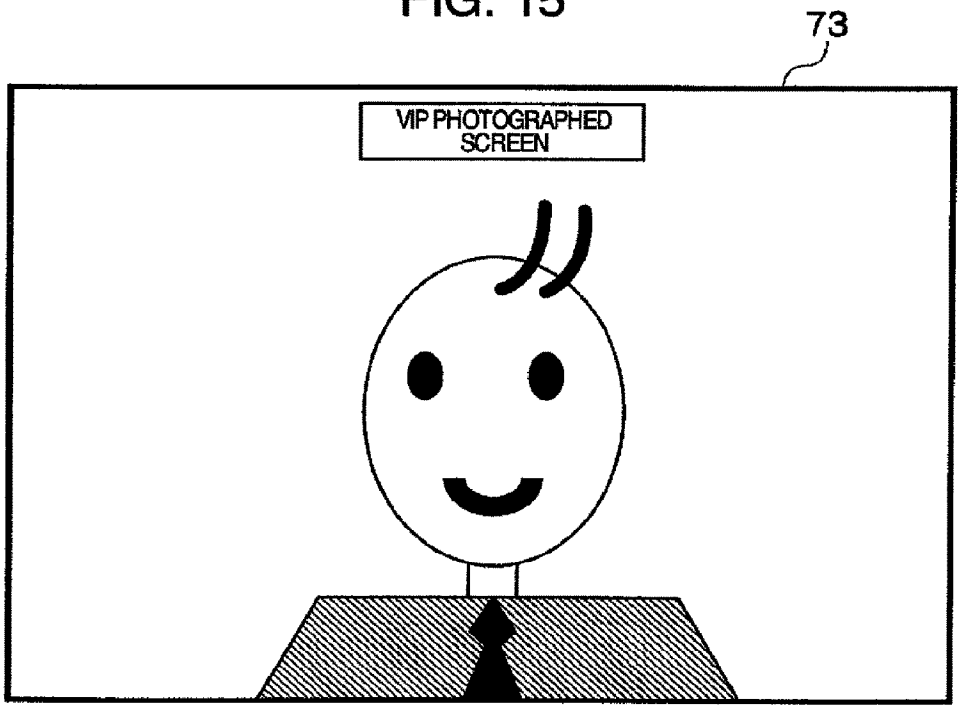

70
PRE-PHOTOGRAPHING VIP SETTING
HOW TO DECIDE VIP?
71
72
PHOTOGRAPH NOW
SELECT FROM LIST

FIG. 15


73
VIP PHOTOGRAPHED SCREEN

RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF

INCORPORATION BY REFERENCE

This application is a continuation of application Ser. No. 12/430,185, filed on Apr. 27, 2009, now pending, which claims the benefit of Japanese Application No. JP 2008-130678 filed on May 19, 2008, in the Japanese Patent Office, the disclosures of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

The present invention relates to a recording and reproducing apparatus and a recording and reproducing method, suitable for application to, e.g., a video camera.

In recent years, recording and reproducing apparatus are in widespread use which apparatus are compatible with randomly accessible recording media such as a digital versatile disc (DVD), a semiconductor memory and a hard disc drive (HDD). Such recording and reproducing apparatus can easily and quickly cue a photographed image recorded in a recording medium.

Of recording and reproducing apparatus of this type, for example, a general video camera manages generally video information of photographed images in the unit of scene, and cues each scene by using management information on each scene. A video camera of this type can set a plurality of chapters in one scene, and can cue each chapter.

A scene means a series of images recorded during a period from when a user depresses a record button to start photographing to when the user depresses again the record button to stop photographing. The number of scenes increases each time photographing is made upon depression of the record button. The chapter means a delimiter of images in one scene.

A user of a video camera can know quickly the contents of each scene by reproducing image information recorded in the recording medium by sequentially cuing each chapter.

However, if the number of chapters set in a scene is large, a user of the video camera is required to repeat a cue operation as many times as the number of chapters set in the scene, in order to confirm the contents to the last scene. There arises therefore a problem of much work and long time.

JP-A-06-165009 discloses techniques of efficiently knowing the contents of a scene by calculating a priority order of each frame from the type of button manipulation during photographing, and reproducing a frame having a higher priority order.

SUMMARY OF THE INVENTION

The capacity of a recording medium of a recent video camera is becoming large so that a scene photographed in a long time duration can be stored in the recording medium or scenes photographed a plurality of times can be stored in the recording medium. It is therefore difficult for a user to quickly find a target scene from a number of scenes recorded in the recording medium.

Some conventional recording and reproducing apparatus are equipped with a function of displaying a list of thumbnail images of scenes. However, this function displays only one thumbnail image per one scene so that a user feels difficult in some cases to know the whole contents of a scene photographed in a long time duration from one thumbnail image. Further, after a lapse of long time after photographing, it is difficult for a user to remember the whole contents of a scene from one corresponding thumbnail image.

If a user cannot remember the contents of a scene even if the thumbnail image is viewed, the user confirms the contents of the scene by reproducing the scene. If the contents of a long time scene is to be confirmed, it becomes necessary to provide a function of confirming quickly the whole contents of the scene by cuing each chapter. However, this function has not been proposed yet.

JP-A-06-165009 discloses techniques of calculating a priority order of each frame from the type of button manipulation during photographing, and when digest reproduction for knowing the contents of a scene is to be performed, reproducing a frame having a higher priority order. According to the techniques, however, a priority degree cannot be set to a scene photographed without button manipulation by a user. It cannot be said that the techniques are easy to use.

The present invention has been made in consideration of the above-described issues, and provides a recording and reproducing apparatus and a recording and reproducing method allowing a user to rapidly and easily find a target chapter or scene.

In order to settle these issues, the present invention provides a recording and reproducing apparatus capable of setting one or more chapters to each scene, comprising: a recording and reproducing unit for recording and reproducing image information on the scene obtained through photographing, relative to a predetermined first recording medium; a face recognizing execution unit for executing a face recognizing process for a photographed image based on the image information; an importance level setting unit for setting an importance level of each chapter in accordance with a result of the face recognizing process for a very important person (VIP) set by a user; and a control unit for controlling the recording and reproducing unit so as to selectively reproduce each chapter having a relevant importance level, among importance levels of respective chapters.

Accordingly, the recording and reproducing apparatus of the present invention can selectively reproduce a particular chapter in accordance with user settings, such as a chapter on which a VIP appears frequently.

The present invention provides further a recording and reproducing method for a recording and reproducing apparatus for recording and reproducing image information on a scene obtained through photographing, relative to a predetermined first recording medium and being capable of setting one or more chapters to each scene, the method comprising: a first step of executing a face recognizing process for a photographed image based on the image information; a second step of setting an importance level of each chapter in accordance with a result of the face recognizing process for a VIP set by a user; and a third step of selectively reproducing each chapter having a relevant importance level, among importance levels of respective chapters.

Accordingly, the recording and reproducing method of the present invention can selectively reproduce a particular chapter in accordance with user settings, such as a chapter on which a VIP appears frequently.

According to the present invention, a user can therefore find an object chapter and scene quickly and easily.

Other objects, features and advantages of the invention will become apparent from the following description of the embodiments of the invention taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram illustrating the structure of a video camera according to first and second embodiments.

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FIG. **2** is a conceptual diagram illustrating an example of chapter management information.

FIG. **3** is a conceptual diagram illustrating an example of face recognizing management information.

FIG. **4** is a conceptual diagram illustrating an example of a photographed image when face recognizing is made valid.

FIG. **5** is a flow chart illustrating the sequence of a photographed image recording process.

FIG. **6** is a flow chart illustrating the sequence of a chapter importance level setting process.

FIG. **7** is a brief diagrammatic view illustrating an example of the layout of a VIP determining screen.

FIG. **8** is a flow chart illustrating the sequence of an importance level determining process.

FIG. **9** is a table illustrating an example of the chapter arrangement of an object scene and a chapter importance level set to each chapter.

FIG. **10** is a flow chart illustrating the sequence of a chapter selecting and reproducing process.

FIG. **11** is a brief diagrammatic view illustrating an example of the layout of a chapter list screen.

FIG. **12** is a brief diagrammatic view illustrating an example of the layout of a scene list screen.

FIG. **13** is a flow chart illustrating the sequence of a VIP setting process.

FIG. **14** is a brief diagrammatic view illustrating an example of a layout of a pre-photographing VIP setting screen.

FIG. **15** is a brief diagrammatic view illustrating an example of the layout of a VIP photographing screen.

DESCRIPTION OF THE EMBODIMENTS

Embodiments of the present invention will now be described with reference to the accompanying drawings.

(1) First Embodiment

(1-1) Structure of Recording and Reproducing Apparatus

In FIG. **1**, reference numeral **1** represents a video camera of the embodiment. The video camera **1** is a hybrid video camera equipped with a DVD drive (not shown) and a built-in hard disc drive **2**. A DVD **3** to be mounted on the DVD drive includes a plurality of types such as DVD-R, DVD-RW, DVD-RAM, DVD+R, DVD+RW and HD (High Definition)-DVD. The type of DVD **3** applicable to the video camera **1** is not specifically limited.

In the video camera **1**, a user interface **4** is constituted of various operation buttons, a touch panel adhered to a screen of a display **6** to be described later. In accordance with a user operation command input from the user interface **4**, a system controller **5** executes a corresponding control process to record a photographed image in the hard disc drive **2** and DVD **3** loaded in the DVD drive and to reproduce a photographed image recorded in the hard disc drive **2** and DVD **3** and display the reproduced image on the display **6**.

The system controller **5** is actually a microcomputer constituted of a central processing unit (CPU), an internal memory and the like. When a record button in the user interface **4** is depressed after a record mode is selected upon operation of the user interface **4**, the system controller **5** drives an image sensor **7** constituted of a charge coupled device (CCD), complementary metal oxide semiconductor (CMOS) transistors and the like.

An optical image of an object is converged by a lens **8** on an optical reception plane of the image sensor **7**. The image sensor **7** photoelectrically converts the optical image, and sends an obtained photographed image signal to an analog/digital converter **9**. The analog/digital converter **9** converts the analog photographed image signal into a digital image signal, and sends the obtained digital information to a compressor/decompressor (CODEC) **10**.

CODEC **10** transfers the supplied image information to the display **6** via a bus **11**. The display **6** may be a liquid crystal display, an organic EL display or the like, and displays a photographed image (through image) basing upon the supplied image information.

CODEC **10** encodes the supplied image information by a predetermined compression encoding method such as a Moving Picture Expert Group (MPEG) method, and stores the obtained encoded image information, and the image information not subjected to encoding, in a random access memory (RAM) **12** via the bus **11**.

Under control of the system controller **5**, the encoded image information stored in RAM **12** is thereafter read by a hard disc drive controller **13** or a DVD drive controller **14**, and recorded in the hard disc drive **2** or DVD **3**.

The image information stored in RAM **12** is read by a face recognizing execution unit **15**. The face recognizing execution unit **15** executes a predetermined face recognizing process for the photographed image corresponding to the image information, and supplies the recognition results to the hard disc drive controller **13** or DVD drive controller **14** storing the encoded image information, as face recognizing management information to be described later. In this manner, the face recognizing management information is recorded in the hard disc drive **2** or DVD **3**, in correspondence with the encoded image information.

When a reproduction button of the user interface **4** is depressed after a reproduction mode is selected upon operation of the user interface **4**, the system controller **5** controls a corresponding one of the hard disc drive controller **13** and DVD drive controller **14** to make the hard disc drive controller **13** or DVD drive controller **14** read and transmit the encoded image information to CODEC **10** via the bus **11**.

Under control of the system controller **5**, CODEC **10** executes a predetermined decoding process for the encoded image information supplied from the hard disc drive controller **13** or DVD drive controller **14**, and transmits the obtained reproduced image information to the display **6** via the bus **11**. In this manner, a reproduced image corresponding reproduced image information is displayed on the display **6**.

An image size converter **16** is also connected to the bus **11**. Under control of the system controller **5**, the image size converter **16** extracts image information on a start frame of each scene and image information on a start frame of each chapter, from the image information stored in RAM **12** and image information read from the hard disk drive **2** or DVD **3** and decoded by CODEC **10**, for example, during photographing. The image size converter **16** converts the extracted image information into image information on thumbnail images of predetermined sizes, and stores the image information on the thumbnail images of a start frame of the scene and a start frame of each chapter in the hard disc drive **2** or DVD **3** storing the encoded image information on the scene, in correspondence with the scene.

It is assumed that the video camera **1** has other hardware and functions of a general video camera, such as light emitting diodes (LED's) for turning on during power-on,

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charging, access to the hard disc drive **2** or DVD **3**, or the like, and batteries for supplying power to each circuit or the like.

In the following description, it is assumed that a photographed image is recorded in the hard disc drive **2** during photographing, and the photographed image is dubbed in DVD **3** after photographing. However, a photographed image may be recorded in DVD **3** during photographing, and the photographed image is dubbed in the hard disc drive **2** after photographing.

(1-2) Scene Management Information

During photographing with the video camera **1**, encoded image information as well as management information of each scene (hereinafter called scene management information) is recorded in the hard disc drive **2**. The scene management information is constituted of information for managing a scene such as chapter management information and face recognizing management information. The chapter management information includes information on a position, length, importance level, summary and the like of a start frame of each chapter. The face recognizing management information includes information on a position of a frame on which a face recognized by the face recognizing execution unit appears during photographing, an expression and size of the face on the frame, and the like.

FIG. **2** illustrates an example of the chapter management information. The chapter management information **20** illustrated in FIG. **2** is constituted of chapter ID information **21**, start frame position information **22** and chapter importance level information **23**, respectively of each chapter set in a scene.

The chapter ID information **21** is information representative of a unique ID given to each chapter (hereinafter called a chapter ID), and the start frame position information **22** is information representative of a position (hour, minute, second and frame number) of a start frame of the corresponding chapter. The chapter importance level information **23** is information representative of an importance level set to the corresponding chapter (herein after called a chapter importance level). The details of the chapter importance level will be described later. Under control of the system controller **5**, the chapter management information **20** is stored in the hard disc drive **2** in correspondence with the encoded image information of the scene.

FIG. **3** illustrates an example of the face recognizing management information. The face recognizing management information **24** illustrated in FIG. **3** is constituted of face ID information **25** for each face recognized in the corresponding scene, path/file name information **26** and frame position information **27**.

The face ID information **25** is information representative of a unique ID given to each face recognized by the face recognizing execution unit **15** (hereinafter called a face ID), and the path/file name information **26** is information representative of a path to the image file of an image of a corresponding face (hereinafter called a face image) or a file name of the image file. A face image to be stored in the image file may be an image captured when the person is recognized first in a frame, or an image capturing the best expression of the person in the scene after distinguishing a good expression such as smile during the face recognizing process.

The frame position information **27** is information representative of a frame position (hour, minute, second and frame number) where a corresponding face is recognized. The frame position information **27** includes all frame positions on which a corresponding face appears. Therefore, the number of frame positions contained in the frame position information **27** becomes larger the larger the number of times when the face (person) appears on the scene. A type of a face expression in a frame may be recorded in correspondence with each frame position.

As described above, the face recognizing execution unit **15** stores the face recognizing management information **24** in the hard disc drive **2** in correspondence with the encoded image information of a photographed image recorded at that time.

(1-3) Chapter Importance Level Setting Method

FIG. **4** illustrates an example of an image photographed by setting a face recognizing function "valid" and displayed on the display **6**. As the face recognizing function of the video camera **1** is set "valid", a rectangular frame **31** is displayed in a photographed image **30** displayed on the display **6**, surrounding a face of a person detected by the face recognizing function. As the face recognizing function is set "invalid", this frame **31** is not displayed.

FIG. **5** illustrates the contents of a process (hereinafter called a photographed image recording process) of recording an image photographed by setting the face recognizing function "valid" in the hard disc drive **2**, to be executed by the system controller **5**. The system controller **5** executes the photographed image recording process illustrated in FIG. **5** in accordance with a corresponding control program stored in the internal memory.

More specifically, as the record button of the user interface **4** is depressed after the record mode is selected, the system controller **5** starts the photographed image recording process. First, the analog/digital converter **9** and CODEC **10** are controlled to store image information of the photographed image and encoded image information in RAM **12**, and the hard disc drive controller **13** is controlled to read the encoded image information of one frame from RAM **12** and store the read encoded image information in the hard disc drive **2** (Step SP**1**).

Next, the system controller **5** controls the face recognizing execution unit **15** to read from RAM **12** the image information of the same frame as the frame whose encoded image information was read from RAM **12** by the hard disc drive controller **13** at Step SP**1** and execute the face recognizing process for the photographed image corresponding to the image information (Step SP**2**).

In this case, for example, the face recognizing execution unit **15** executes the face recognizing process by template matching, for example, using an average face. However, if a user forms a VIP list registering VIP's before photographing, the face recognizing process may be executed by template matching using the VIP list. After the face recognizing process is completed, the face recognizing execution unit **15** reflects the results of the face recognizing process upon the face recognizing management information described with reference to FIG. **3** (updating the face recognizing management information).

Next, the system controller **5** judges whether encoded image information of all frames obtained through photographing has been recorded in the hard disc drive **2** (Step SP**3**). If this judgment is negated, the flow returns to step SP**1**, and the system controller **5** repeats similar processes (SP**1** to SP**3**, to SP**1**).

If the judgment is affirmed at Step SP**3** after the encoded image information of all frames obtained through photo-

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graphing is recorded in the hard disc drive **2**, the system controller **5** terminates the photographed image recording process.

The face recognizing process at Step SP**2** of the photographed image recording process may be executed for each frame as described above, or may be executed once for several frames. As the face recognizing process is executed once for several frames, a process load on the face recognizing execution unit **15** can be reduced.

A function (hereinafter called a post-photographing face recognizing function) may be provided allowing a face recognizing process to be executed for an image already photographed by setting the face recognizing function "invalid", through operation of a menu or the like. The face recognizing management process similar to that illustrated in FIG. **3** can be obtained by this function. With this post-photographing face recognizing function, a chapter importance level can be set using the face recognizing function as will be described later, even for a scene photographed with another video camera without the face recognizing function. This is very convenient for a user.

Next, description will be made on a method of determining an importance level of each chapter in one scene in accordance with the results (face recognizing management information **24** (FIG. **3**)) of the face recognizing process obtained in the manner described above.

It is assumed in the following that at least one chapter is set in each scene. A chapter forming method includes a method of making a user manually determine the position of each chapter, a method of automatically setting the position of each chapter where a luminance change is large in the scene, a method of automatically setting chapters at equal pitch of several minutes to several ten minutes, and other methods. In this embodiment, a chapter may be set by any one of these methods.

FIG. **6** illustrates the process contents of the system controller **5** regarding a chapter importance level setting function of setting an importance level of each chapter in a scene. As the user interface **4** is operated and a first screen display request is input, the system controller **5** executes a chapter importance level setting process illustrated in FIG. **6**, in accordance with a corresponding program stored in the internal memory (not shown).

More specifically, upon input of the first screen display request, the system controller **5** reads first the chapter management information **20** (FIG. **2**) and face recognizing management information **24** (FIG. **3**), stored in the hard disc drive **2**, of a scene to be processed at that time (hereinafter called an object scene), and displays a VIP deciding screen **40** illustrated in FIG. **7** on the display **6**, by using the chapter management information **20** and face recognizing management information **24** (Step SP**10**).

The VIP deciding screen **40** is a screen to be used for a user to decide a VIP in the object scene. The VIP deciding screen **40** displays face images **41** of all persons recognized during photographing the object scene. Each face image **41** is displayed in accordance with image data read from the image file identified by a corresponding path/file name information **26** (FIG. **3**) in the face recognizing management information **24** described with reference to FIG. **3**.

A user can select a VIP from the face images **41** of persons displayed on the VIP deciding screen **40**. A plurality of VIP's may be selected. Faces of objects having a high appearance frequency such as family members may be registered beforehand in the video camera **1** as a VIP list, and the faces of only the registered persons are displayed on the VIP deciding screen **40**. In this manner, since the face of a person not associated with the object and photographed in the background is not displayed, it becomes easy for a user to decide a VIP.

After the face image **41** of the person desired to be set as a VIP is selected by a predetermined operation, the user depresses a "decide" button **42** to register the selected person as a VIP. If an operation of deciding the chapter importance level is desired to be terminated, a "cancel" button **43** is depressed. If it is arranged in such a manner that a user can set whether such a VIP list is always used or not, user-friendliness of the video camera **1** can be improved.

Next, the system controller **5** stands by until a VIP is decided using the VIP deciding screen **40** (Step SP**11**). As the user decides a VIP, an importance level of each chapter of the object scene is determined in accordance with the decided VIP (Step SP**12**).

The system controller **5** reflects the importance level of each chapter decided at Step SP**12** upon the chapter management information **20** described with reference to FIG. **2** (Step SP**13**), to thereafter terminate the chapter importance level setting process.

FIG. **8** illustrates the specific process contents of the system controller **5** in the chapter importance level setting process at Step SP**12**.

In the chapter importance level setting process at Step SP**12**, the system controller **5** starts the importance level setting process. First, the number of appearance frequencies of the VIP decided by the user using the VIP deciding screen **40** (FIG. **7**) is counted for each chapter of the object scene (Step SP**14**).

More specifically, the system controller **5** prepares counters corresponding in number to the number of chapters in the scene, on the inner memory of the system. The system controller **5** reads the positions of all frames on which the VIP decided by the user using the VIP deciding screen **40** appears, from the face recognizing management information **24** (FIG. **3**), by using a face ID of the VIP, and judges to which chapter each frame belongs, by referring to the chapter management information **20** (FIG. **2**). In accordance with the judgment results, the system controller **5** increments by "1" the count of the counter corresponding to the chapter to which the frame belongs, for each frame on which the VIP appears. The system controller **5** executes these processes for all VIP's decided by the user using the VIP deciding screen **40**.

Next, the system controller **5** normalizes the counts of the counters in a range from "1" to "5" (Step SP**15**), and decides a value obtained by subtracting each normalized value from "6", as an importance level of each chapter corresponding to the counter (Step SP**16**).

With these processes, the highest chapter importance level of "1" is set to the chapter on which the VIP appears most frequently, and the lowest chapter importance level of "5" is set to the chapter on which the VIP appears least frequently. Thereafter, the system controller **5** terminates this importance level deciding process and returns to the chapter importance level setting process.

If a user selects a plurality of VIP's on the VIP deciding screen **40**, the chapter importance levels may be weighted to allow the user to set more important persons. User-friendliness of the video camera **1** can therefore be improved further.

(1-4) Reproducing Method Using Chapter Importance Level

Next, description will be made on an object scene reproducing method basing upon the chapter importance level of

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each chapter set in the manner described above. It is assumed in the following description that the chapter importance level is set in five steps, "1" being the highest chapter importance level, and "5" being the lowest chapter importance level. In the following, the chapter importance levels are distinguished for the purposes of convenience by calling the chapter importance level "1" superexpress, the chapter importance level "3" express, and the chapter importance level "5" standard.

FIG. **9** illustrates an example of the chapter structure of an object scene and a chapter importance level set to each chapter. In the example illustrated in FIG. **9**, the object scene is divided into nine chapters having chapter ID's of "001" to "009". The chapter importance level "1" is set to two chapters having the chapter ID's "002" and "005", the chapter importance level "3" is set to two chapters having the chapter ID's "004" and "009", and the chapter importance level "5" is set to the remaining chapters having the chapter ID's "001", "003", "006" to "008".

In this example, as reproduction is performed by selecting as a reproducing mode a "standard reproducing mode" from the menu, all chapters are sequentially reproduced in an order of smaller chapter ID, irrespective of the chapter importance level set to each chapter. Namely, in the "standard reproducing mode", the chapters having the chapter importance level "5" or smaller (the chapters having the chapter importance levels "1" to "5", i.e., all chapters) are reproduced in this mode of the embodiment.

Further, as a user starts reproducing by selecting as the reproducing mode an "express reproducing mode", the video camera **1** reproduces first the chapter having the chapter importance level "1" and chapter ID "002", then the chapter having the chapter importance level "3" and the chapter ID "004", and next the chapter having the chapter importance level "1" and the chapter ID "005". Lastly, the video camera **1** reproduces the chapter having the importance level **3** and the chapter ID "009" to thereafter terminate scene reproducing. Namely, in the express reproducing mode", only the chapters having the chapter importance level "3" or smaller (only the chapters having the importance levels "1" to "3") are reproduced. Therefore, as cue skipping is performed during reproducing in the "express reproducing mode", reproducing starts from the start frame of the next chapter having the chapter importance level "3" or smaller.

Furthermore, as a user starts reproducing by selecting as the reproducing mode a "superexpress reproducing mode", the video camera **1** reproduces first the chapter having the chapter importance level "1" and chapter ID "002", then the chapter having the chapter importance level "1" and the chapter ID "005" to thereafter terminate scene reproducing. Namely, in the "super express reproducing mode", only the chapters having the chapter importance level "1" are reproduced.

Therefore, the video camera **1** reproduces always the chapter having the chapter importance level "1" as any of the reproducing modes is selected, and each of other chapters is reproduced only when the reproducing mode is selected reproducing the chapter having the chapter importance level same as or smaller than that set to each of other chapters.

By utilizing this function (hereinafter called a chapter select reproducing function), the superexpress reproducing mode is used for confirming roughly the contents of the object scene, and at the stage when reproducing comes near the images whose contents are desired to be confirmed in detail, the reproducing mode is switched to the standard reproducing mode. In this manner, the contents of the object scene can be confirmed efficiently and conveniently. The superexpress reproducing mode is very convenient for a user desiring to confirm the contents of a scene in short time.

FIG. **10** illustrates the process contents of the system controller **5** regarding the chapter select reproducing function. The system controller **5** executes the chapter select reproducing process illustrated in FIG. **10** in accordance with a control program stored in the internal memory.

Namely, as a reproducing operation start command is input after the "standard reproducing mode", "express reproducing mode" or "superexpress reproducing mode" is selected, the system controller **5** starts the chapter select reproducing process to first read the chapter management information of the object scene from a corresponding hard disc drive **2** or DVD **3** (Step SP**20**).

Next, in accordance with the ID information contained in the chapter management information, the system controller **5** selects the first chapter (e.g., the chapter having the smallest chapter ID) (Step SP**21**), and judges whether the chapter importance level of the chapter is a predetermined threshold value or smaller set to the present reproducing mode (Step SP**22**). The threshold value is "5" if the "standard reproducing mode" is set, "3" if the "express reproducing mode" is set, and "1" if the "superexpress reproducing mode" is set.

If a judgment at Step SP**22** is negated, the flow advances to Step S**24**, whereas if the judgment is affirmed, the system controller **5** controls CODEC **10** to reproduce the chapter and display the reproduced image on the display (Step SP**23**).

Next, the system controller **5** refers to the chapter management information to judge whether the chapter next to the chapter selected at Step SP**21** exists (Step SP**24**). If this judgment is affirmed, the flow returns to Step SP**21** to repeat similar processes by sequentially switching the chapter to be selected at Step SP**21** (Steps SP**21** to SP**24**, to SP**21**).

As the processes at Steps SP**21** to SP**24** are completed for all chapters and the judgment at Step SP**24** is negated, the system controller **5** terminates the chapter select reproducing process.

Next, description will be made on an approach to making a user to easily confirm the chapter importance level set to each chapter in a scene.

FIG. **11** illustrates a chapter list screen **50** displayed on the display **6** by a user menu operation. For each chapter of an object scene, a thumbnail image **51** set to the chapter, and chapter management information **52** such as a lapse time from the scene start, a chapter importance level and the like, are displayed on the chapter list screen **50**.

More practically, when a display command for the chapter list screen **50** is input by operating the user interface **4**, the system controller **5** controls a corresponding hard disc drive controller **13** or DVD drive controller **14** to read from the hard disc drive **2** or DVD **3** the chapter management information **20** (FIG. **2**) of the object scene, and the image information on the thumbnail image **51** of the start frame of each chapter stored in correspondence with the object scene. Then, the system controller **5** operates to display the thumbnail image **51** of the start frame of each chapter on the chapter list screen **50** in accordance with the read image information, and display the management information **52** of each chapter based on the chapter management information **20**, on the chapter list screen **50**, in correspondence with the thumbnail image **51**.

In this manner, a user can know the chapter having a high chapter importance level from the chapter list screen **50**, and can find an important image quickly.

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Next, description will be made on an approach to making a user easily confirm a scene set with a chapter importance level.

FIG. **12** illustrates a scene list screen displayed on the display by a user menu operation. A thumbnail image **54** of each scene stored in the hard disc drive **2** or DVD **3** is displayed on the scene list screen **53**.

More practically, when a display command for the scene list screen **53** is input by operating the user interface **4**, the system controller **5** controls a corresponding hard disc drive controller **13** or DVD drive controller **14** to read from the hard disc drive **2** or DVD **3** the image information on the thumbnail image **54** of the start frame of every scene stored in the hard disc drive **2** or DVD **3** designated by the user. Then, the system controller **5** operates to display the thumbnail image **54** of the start frame of each scene on the scene list screen **53**, in accordance with the read image information.

In this case, the system controller **5** refers to the chapter management information **20** (FIG. **2**) of each scene, and displays an icon **55** having a predetermined shape on the thumbnail image **54** of the scene set with the chapter importance level.

It is therefore possible for a user to judge from the icon **55** whether a chapter importance level is set to the scene for example, to be reproduced. The contents of the scene displayed with the icon **55** can be confirmed efficiently by immediately performing a reproducing operation by the reproducing method using the chapter importance level as described above. For the scene not displayed with the icon, the chapter importance level setting process is executed before the reproduction operation so that the reproducing operation by the above-described reproducing method can be performed.

(1-5) Scene Dubbing Process

Next, description will be made on a process of dubbing encoded image information recorded in the hard disc drive **2** into DVD **3**.

When the scene set with the chapter importance level is dubbed from the hard disc drive **2** into DVD **3** in the video camera **1**, the system controller **5** copies not only the encoded image information and scene management information (chapter management information **20** (FIG. **2**) and face recognizing management information **24** (FIG. **3**) but also an image file of face images of faces registered in the face recognizing management information **24** contained in the scene management information, into DVD **3**. Therefore, even if the encoded information in the hard disc drive **2** is erased, reproducing using a chapter importance level and re-setting a chapter importance level can be performed immediately.

(1-6) Effects of the Embodiment

According to the video camera of the embodiment described above, the chapter importance level of each chapter can be set basing upon the results of the face recognizing process executed during photographing. It is therefore possible for a user to quickly find a chapter on which an object person (VIP) appears frequently. Further, a chapter having a relevant chapter importance level is selectively reproduced, among chapter importance levels of respective chapters, so that a user can confirm the whole contents of the scene easily and in short time and can find an object scene quickly. In this manner, user-friendliness of the video camera **1** can be improved considerably.

(2) Second Embodiment

In FIG. **1**, reference numeral **60** represents a video camera of the second embodiment. The video camera **60** of the second embodiment is configured like the video camera **1** of the first embodiment, excepting that the chapter importance level setting method is different from that of the first embodiment.

Namely, in the first embodiment, a user decides a VIP by using the VIP deciding screen **40** (FIG. **7**) after photographing, and in accordance with the decision, a chapter importance level of each chapter is set. In contrast, in the second embodiment, the face recognizing process is executed only for a VIP decided by a user before photographing, and in accordance with the results of the face recognizing process, a chapter importance level of each chapter is set.

FIG. **13** illustrates the process contents of the system controller regarding a VIP setting process for a user to set a VIP before photographing, in the chapter importance setting method of the second embodiment. The system controller **61** executes the VIP setting process in accordance with a control program stored in the inner memory (not shown).

Namely, when a VIP setting mode is selected by operating the user interface **4**, the system controller **61** starts the VIP setting process to first display a pre-photographing VIP setting screen **70** illustrated in FIG. **14** on the display **6** (Step SP**30**).

Next, the system controller **61** stands by until one of first and second VIP deciding method select buttons **71** and **72** displayed on the pre-photographing VIP setting screen **70** (Step SP**31**) is depressed. The first VIP deciding method select button **71** is a button corresponding to a mode of preparing for photographing a VIP, and the second VIP deciding method select button **72** is a button corresponding to a mode of deciding a VIP among persons recognized during photographing already performed, similar to the first embodiment.

As one of the first and second VIP deciding method select buttons **71** and **72** is depressed, the system controller **61** judges whether the depressed button is the first VIP deciding method select button **71** (Step SP**32**).

As this judgment is affirmed, the system controller **61** drives the image sensor **7**, analog/digital converter **9** and CODEC **10** to display an image illustrated in FIG. **15** and photographed at that time by a user, on the display **6** (Step SP**34**). In this case, the user photographs a VIP to be registered with the video camera **60**.

Next, during photographing a VIP, the system controller **61** drives the face recognizing execution unit **15** to execute the face recognizing process for the VIP under photographing (Step SP**35**). After completion of the face recognizing process, the system controller **61** makes the face recognizing execution unit **15** form the face recognizing management information **24** (FIG. **3**) based upon the face recognizing process results, and store this information in the hard disc drive **2** (Step SP**38**). Thereafter, the system controller **61** terminates the VIP setting process.

If the judgment at Step SP**32** is negated (i.e., if the second VIP deciding method select button **72** is depressed), the system controller **61** displays the VIP display screen **40** described with reference to FIG. **7** on the display **6** (Step SP**36**).

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Next, the system controller **61** stands by until a VIP is selected from the VIP display screen **40** (Step SP**37**). As a VIP is selected, the face recognizing execution unit **15** is instructed to form the face recognizing management information **24** illustrated in FIG. **3** registering only information on the selected VIP (Step SP**38**). Thereafter, the system controller **61** terminates the VIP setting process.

With this arrangement, the system controller **61** controls the face recognizing execution unit **15** to reflect only the results of the face recognizing process for the VIP registered in the manner described above, upon the face recognizing management information **24** (FIG. **3**), during photographing. Each time scene photographing is completed, the importance level setting process described with reference to FIG. **8** is executed to determine a chapter importance level of each chapter set in the scene, and in accordance with the determined chapter importance level, the chapter management information **20** (FIG. **2**) is updated.

As described above, the video camera **60** of the embodiment executes the face recognizing process only for a VIP decided before moving image photographing, and in accordance with the results of the face recognizing process, a chapter importance level of each chapter is set. It is therefore possible to facilitate setting of the chapter importance level of each chapter. Further, since the video camera **60** registers a VIP in advance as described above, it is possible to avoid the following phenomenon. Namely, in performing autofocus and autoexposure utilizing face recognition, if the face of another person photographed together with a VIP is recognized by chance, the optimum focus and exposure are set to this other person, and the object VIP is not photographed well.

(3) Other Embodiments

In the first and second embodiments, the present invention is applied to the video camera **1**, **60** configured as illustrated in FIG. **1**. The present invention is not limited thereto, but is also applicable to video cameras having various structures, apparatus other than video cameras such as DVD recorders, electronic still cameras and mobile phones provided with a moving image photographing function.

Further, in the first and second embodiments, although the hard disc drive **2** and DVD **3** are adopted as recording media for recording photographed images, the present invention is not limited thereto, but recording media other than the DVD and hard disc drive may also be adopted including a Blu-ray disc (BD), a compact disc (CD), a mini disc (MD), a semiconductor memory and the like.

Furthermore, in the first and second embodiments, although the hard disc drive **2** and a DVD drive as the recording/reproducing unit for recording and reproducing image information on photographed scenes relative to recording media are built in the video camera **1**, **60**, the present invention is not limited thereto, but may adopt an external mount type drive connected by USB (Universal Serial Bus), eSATA (External Serial Advanced Technology Attachment) and the like as the recording and reproducing unit.

Still further, in the first and second embodiments, although one system controller **5**, **61** is constituted of: an importance level setting unit for setting a chapter importance level of each chapter in accordance with the results of a face recognizing process for a VIP set by a user; a controller for controlling the hard disc drive **2** and DVD drive so as to selectively reproduce a chapter having a relevant importance level, among importance levels of respective chapters; and a VIP setting unit for setting as a VIP a person corresponding to a face image selected by a user from a list of face images displayed on the display, the present invention is not limited thereto, but the importance level setting unit, control unit and VIP setting unit may be structured discretely.

The present invention is widely applicable to various recording and reproducing apparatus such ad DVD recorders in addition to video cameras.

The preferred embodiments of the present invention have been described above. According to the present invention, a particular chapter can be selectively reproduced in accordance with user settings so that a user can find quickly a chapter on which a desired person appears. Further, since a particular chapter based on user settings can be selectively reproduced, a user can know the whole contents of a scene in short time and easily.

It should be further understood by those skilled in the art that although the foregoing description has been made on embodiments of the invention, the invention is not limited thereto and various changes and modifications may be made without departing from the spirit of the invention and the scope of the appended claims.

The invention claimed is:

1. A recording and reproducing apparatus for recording and reproducing video information, comprising:

a photographing unit for photographing an object and for generating video information;

a recording unit for recording the video information having been generated by the photographing unit into a recording medium;

a face-recognition processing unit executing a face-recognizing process on the video information to recognize a face;

a reproducing unit for reproducing the video information having been recorded by the recording unit from the recording medium;

a specific person setting unit setting one of a first setting mode and a second setting mode and executing a process of specifying a person with a face according to the set one of the first setting mode and the second setting mode, wherein, when the first setting mode is set, a person is specified with a face recognized by the face-recognition processing unit after the first setting mode is set and before the recording of the video information by the recording unit, and, when the second setting mode is set, a person is specified with a face in the video information in the recording medium that has previously been recorded and previously recognized by the face-recognition processing unit before the specific person setting unit sets the first setting mode or the second setting mode; and

a control unit for controlling the reproducing unit so as to selectively reproduce the video information from the recording medium which includes the specific person set by the specific person setting unit according to a result of the face-recognition processing unit.

2. The recording and reproducing apparatus according to claim **1**, further comprising:

a user interface unit by which a user selects one of operation modes including:

(1) a specific person setting mode having the first setting mode and the second setting mode,

(2) a recording mode in which the video information generated by the photographing unit are recorded in the recording medium, and

(3) a reproducing mode in which the video information is to be reproduced by the reproducing unit.

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wherein the control unit controls the recording and reproducing apparatus according to the mode selected by the user interface unit.

3. The recording and reproducing apparatus according to claim **2**, wherein the specific person setting mode is configured to specify one or more persons, and the control unit is configured to control the reproducing unit so as to reproduce the video information of the specified one or more persons.

4. The recording and reproducing apparatus according to claim **2**, further comprising:

a displaying unit for displaying information of a face to which the face-recognizing processing has been conducted, in case that the recording mode is selected by the user interface.

5. The recording and reproducing apparatus according to claim **2**, wherein the reproducing mode selected by the user interface is for reproducing the video information of the specific person specified by the specific person setting unit by which one of a plurality of reproducing modes can be selected, each of the reproducing modes having a respective number of the video information of the specific person, and wherein the control unit controls the reproducing unit so as to reproduce the video information of the specific person according to the selected one of the reproducing modes.

6. The recording and reproducing apparatus according to claim **1**, wherein the controlling unit further controlling the reproducing unit to reproduce the video information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the video information under the first reproducing mode is shorter than a reproducing time required for reproducing the video information under the second reproducing mode, and the video information reproduced under the second mode includes the video information reproduced under the first reproducing mode in addition to other of the video information not reproduced under the first reproducing mode.

7. The recording and reproducing apparatus according to claim **6**, wherein the controlling unit further controlling the reproducing unit to reproduce the video information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the video information under the third reproducing mode is longer than the reproducing time required for reproducing the video information under the second reproducing mode.

8. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a processor; and

a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:

capture a photograph and generate image information of the photograph;

record the image information in a recording medium;

execute a face-recognizing process on the image information to recognize a face;

reproduce the recorded image from the recording medium;

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person; and

selectively reproduce the recorded image information which includes the registered specific person.

9. The recording and reproducing apparatus according to claim **8**,

wherein the image information to be selectively reproduced is the image information which is recognized as including the specific person before the recording of the image information.

10. The recording and reproducing apparatus according to claim **8**,

wherein the image information to be selectively reproduced is the image information having a relatively high importance level picked out among the image information recorded in the recording medium which includes the registered specific person.

11. The recording and reproducing apparatus according to claim **8**, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

12. The recording and reproducing apparatus according to claim **11**, wherein the memory further stores instructions that, when executed by the processor, cause the processor to:

control the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode,

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

13. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face,

register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing

mode and thereafter registered as the specific person, and, when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person,

firstly pick out image information which includes the registered specific person,

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition.

14. The recording and reproducing apparatus according to claim **13**,

wherein the image information to be selectively and sequentially reproduced is the image information which is recognized as including the specific person before the recording of the image information by the recorder.

15. The recording and reproducing apparatus according to claim **13**,

wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information having the predetermined condition including a relatively high importance level picked out from among the image information recorded in the recording medium which includes the registered specific person.

16. The recording and reproducing apparatus according to claim **13**, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

17. The recording and reproducing apparatus according to claim **16**, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

18. A recording and reproducing apparatus for recording and reproducing image information, comprising:

a photographing sensor configured to photograph an object and generate image information;

a recorder configured to record the image information generated by the photographing sensor in a recording medium;

a reproducer configured to reproduce the image information recorded by the recorder;

processing circuitry configured to:

execute a face-recognizing process on the image information generated by the photographing sensor to recognize a face;

register a person in the image information as a specific person, wherein a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person;

firstly pick out image information which includes the registered specific person,

secondly pick out the image information based on a predetermined condition from among the picked-out image information which includes the registered specific person, the predetermined condition being set in accordance with an instruction by a user, and

control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition.

19. The recording and reproducing apparatus according to claim **18**, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in a reproducing mode set from one of a first reproducing mode and a second reproducing mode, and

wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

20. The recording and reproducing apparatus according to claim **19**, wherein the processing circuitry is further configured to control the reproducer to selectively and sequentially reproduce the image information picked out based on the predetermined condition in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode, and

wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.

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