

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

138 EAST LCD ADVANCEMENTS LIMITED,
Patent Owner.

IPR2024-00961
Patent 7,945,109 B2

Before KRISTEN L. DROESCH, GEORGE R. HOSKINS, and
KEVIN C. TROCK, *Administrative Patent Judges*.

DROESCH, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background

Google LLC (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–3 of U.S. Patent No. 7,945,109 B2 (Ex. 1001, “the ’109 Patent”). Paper 1 (“Pet.”). Petitioner filed a Declaration of Kenneth Parulski with its Petition. Ex. 1003. 138 East LCD Advancements Limited (“Patent Owner”) timely filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). Patent Owner filed a Declaration of Nikolaos Papanikolopoulos, Ph.D., with its Preliminary Response. Ex. 2001.

We have authority to determine whether to institute review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a). An *inter partes* review may not be instituted unless it is determined that “the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a).

For the reasons provided below, we determine, based on the record before us, there is a reasonable likelihood Petitioner would prevail in showing at least one of the challenged claims is unpatentable.

B. Real Parties-In-Interest

Petitioner indicates that Google LLC is the real party-in-interest. Pet. 57. Patent Owner indicates that 138 East LCD Advancements Limited and Longitude Licensing Limited are the real parties-in-interest. Paper 3, 1.

C. Related Matters

The parties indicate the ’109 Patent is involved in *Longitude Licensing Limited v. Google, LLC*, Case No. 3:23-CV-03046-VC (N.D.

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Cal.), which is on appeal to the Court of Appeals for the Federal Circuit, Docket No. 24-1202. Pet. 58; Paper 3, 1.

Petitioner has filed six other IPR challenges to patents owned by Patent Owner. They are IPR2024-00955 (U.S. Patent No. 7,668,365 B2); IPR2024-00956 (U.S. Patent No. 8,355,574 B2); IPR2024-00957 (U.S. Patent No. 7,454,056 B2); IPR2024-00958 (U.S. Patent No. 8,482,638 B2); IPR2024-00959 (U.S. Patent No. 7,428,082 B2); and IPR2024-00960 (U.S. Patent No. 7,486,807 B2).

D. The '109 Patent (Ex. 1001)

The '109 Patent “relates to an image processing technique that uses major object information of images.” Ex. 1001, 1:14–15. According to the '109 Patent, it is known to improve accuracy of image processing, i.e., “image correction,” of image data that was shot by a shooting device by dividing the image into plural regions and performing an image correction via a focus on an emphasis region of the image. *See id.* at 1:19–23. The emphasis region of an image is the region that contains the major object of the image and is typically the central region of the image. *See id.* at 1:23–26. But when the major object is located on the side region of an image, conventional techniques “had difficulties in achieving an image correction of the major object with high accuracy.” *Id.* at 1:31–35. The '109 Patent purports to solve this problem by “setting and using an appropriate emphasis region for every image data.” *Id.* at 1:40–43. The '109 Patent discloses that “by dividing an image into plural regions, it is possible to determine an emphasis region with high accuracy, and it is also possible to improve the accuracy of image processing based on the emphasis region.” *Id.* at 2:2–5.

Figure 1 of the '109 Patent is reproduced below.

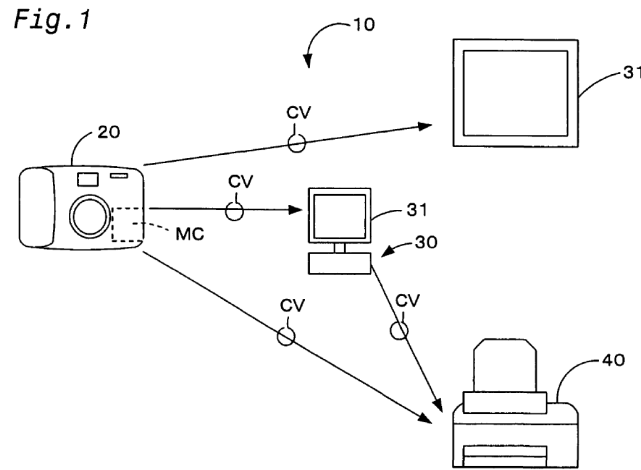


Figure 1 is a schematic of an image processing system and depicts image processing system 10 having digital still camera 20 “as a shooting device that generates an image file including image data and image processing control information, which specifies image processing conditions in an image processing device.” Ex. 1001, 5:14–16, 6:2–10. Image processing system 10 further includes printer 40 and personal computer 30 that use the image file that was generated in digital still camera 20. *See id.* at 6:10–16.¹ Personal computer 30 includes a CPU that executes an image processing program, a RAM that temporally stores the result of processing image data, a high density drive (HDD) that stores the image processing program, the processed image data, etc., and a display device 31 for displaying the result of processing, the image data, etc. *See id.* at 7:35–45.

The image file that was generated in digital still camera 20 “typically has a file structure that conforms to the image file format standard (Exif) for

¹ The reference numbers in the written description sometimes do not match those in the figures. As a result, we refer to the reference numbers in the figures.

digital still cameras.” Ex. 1001, 6:44–46. The image file contains image processing control information (CI) “that specifies image processing conditions in an image processing device, e.g. focus location information.” *Id.* at 6:48–52. To conform with the Exif file format, the image file comprises a Joint Photographic Experts Group (JPEG) image data storage region that stores image data in JPEG format, and an adjunct information storage region that stores various information regarding the stored JPEG image data such as on-shooting information regarding shooting conditions of the JPEG image that includes time and date of shooting, exposure, shutter speed, and so forth, and thumbnail image data of the JPEG image that is stored in the JPEG image data storage region. *Id.* at 6:63–7:5, Fig. 3. The adjunct information storage region also includes a Makernote data storage region that is “an undefined region open to [(digital still camera)] DSC makers,” and in one embodiment, the Makernote data storage region “is stored with image processing control information CI that specifies image processing conditions in an image processing device, e.g. focus location information.” *Id.* at 7:6–16, Fig. 3. Instead of conforming to Exif file format, the image file generating device “may also use other image files that are generated by input devices such as a digital video camera or a scanner.” *Id.* at 7:22–26.

The image file generation processing that is executed in digital still camera 20 starts with obtaining preset image processing control information, i.e., setting information of a shot scene that was set by a photographer, in which the shot scene may be in modes such as a portrait mode. *See* Ex. 1001, 8:7–29, Fig. 6. Then, the focus location information is obtained at the time of the push-down of the shutter button, in which “the focus location

information indicates the location to which the focus is on within a shooting frame at the time of shooting.” *Id.* at 8:32–36. Then, the image processing control information that is not preset is obtained. *See id.* at 8:40–43. Then, the preset image processing control information, the focus location information, and the image processing control information are recorded in a control information storage region of an Exif file, whereas the image data is recorded in a JPEG image data storage region of the file in JPEG data format. *See id.* at 8:49–53.

Figure 7 of the ’109 Patent is reproduced below.

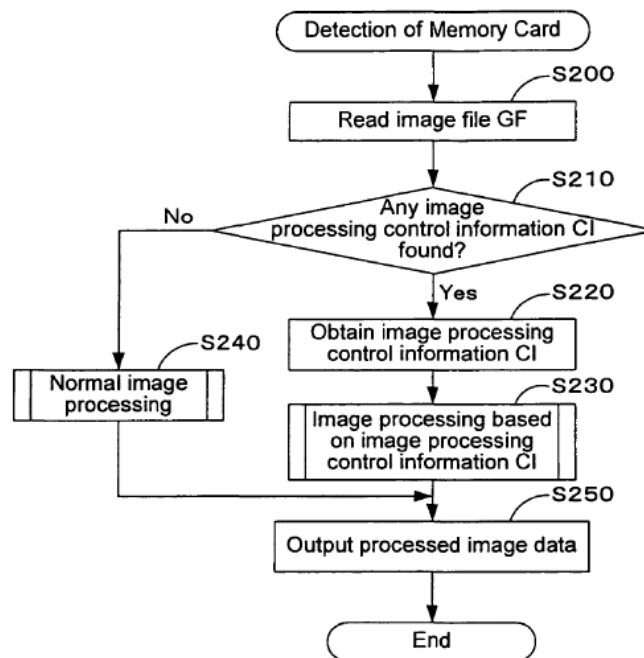


Figure 7 is a flowchart of a processing routine of an image processing control that is executed by personal computer 30, which starts with the CPU detecting the attachment of a memory card in a card slot. *See Ex. 1001*, 5:33–35, 9:8–11, 9:17–19. Then in the next step S200, the CPU reads an image file GF, which was specified via an input device from the memory card. *See id.* at 9:19–21. Then in step S210, the CPU retrieves image processing control information CI from the control information storage

region of the image file GF, and if any image processing control information CI was found, the CPU would obtain the image processing control information CI which includes focus location information in step S220. *See id.* at 9:21–27. Then in step S230, the CPU executes image processing based on the obtained image processing control information CI. *See id.* at 9:27–29. Back in step S210, if no image processing control information CI was found in the control information storage region of the image file GF, the CPU would execute image processing in a normal way in step S240. *See id.* at 9:30–33. When image processing is complete in step S230 or in step S240, the CPU outputs the processed image data to printer 40 or display device 31 in step S250, and ends the processing routine. *See id.* at 9:38–41.

Using the adjustment of the brightness value of an image as an example, the image adjustment processing based on the focus location information can be executed. *See Ex. 1001, 10:34–38.* The CPU divides an image into plural regions with each region having a coordinate location information. *See id.* at 10:38–41. The CPU then generates a histogram and calculates an average brightness for each of the regions, then determines a focus location on the image by using focus location information, sets a region at the determined location as an emphasis region, and sets the average brightness of the emphasis region as a brightness criterion. *See id.* at 10:43–49. Instead of brightness adjustment, it is possible to use sharpness adjustment with respect to focus location information for image quality adjustment. *See id.* at 13:3–7. “In such a case, it is possible to strengthen the sharpness of an image at a focus location or in an emphasis region, or weaken the sharpness of an image in the other regions by using a Gaussian

distribution method, so as to blur away the backgrounds of the image in a suitable way.” *Id.* at 13:7–12.

E. Illustrative Claim

Claims 1–3 are independent. *See* Ex. 1001, 14:63–16:13. Claim 1 is illustrative and reproduced below:

1. An image processing apparatus comprising:
a CPU, the CPU executing functions including
acquiring an image file, the image file including image data,
shooting scene information, and location information of a
person in the image data, and
increasing sharpness of an area in which the person is
located and decreasing sharpness of an area in which the
person is not located based on the acquired location
information when the acquired shooting scene
information indicates a portrait scene.

Ex. 1001, 14:63–15:5.

F. Asserted Patentability Challenges and Asserted Prior Art

Petitioner asserts that claims 1–3 would have been unpatentable based on the following grounds (Pet. 5):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–3	103(a) ²	Onuki, ³ Luo-668 ⁴
1–3	103(a)	Onuki, Luo-668, Exif ⁵

² The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103 effective March 16, 2013. Because the ’109 Patent claims an effective filing date prior to the effective date of the applicable AIA amendment, we refer to the pre-AIA version of § 103.

³ U.S. Patent No. 6,556,784 B2, issued Apr. 29, 2003 (Ex. 1005).

⁴ U.S. Patent No. 7,212,668 B1, issued May 1, 2007 (Ex. 1006).

⁵ Digital Still Camera Image File Format Standard (Exchangeable image file format for Digital Still Cameras: Exif), Version 2.1, Japan Elec. Indus. Dev. Ass’n, June 12, 1998, available at <http://web.archive.org/web/>

II. ANALYSIS

A. Claim Construction

In an *inter partes* review proceeding, the Board applies the same claim construction standard as that applied in federal courts in a civil action under 35 U.S.C. § 282(b), which is generally referred to as the *Phillips* standard. *See* 37 C.F.R. § 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Under the *Phillips* standard, “words of a claim ‘are generally given their ordinary and customary meaning.’” *Phillips*, 415 F.3d at 1312.

Neither party provides explicit proposed claim constructions. *See* Pet. 11; Prelim. Resp. 5. For the purpose of institution, we need not construe explicitly any claim terms or phrases. *See, e.g., Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

B. Level of Ordinary Skill in the Art

Petitioner asserts that “a person of ordinary skill in the art (‘POSITA’) would have had a Bachelor’s degree or equivalent in electrical engineering, computer science, or a related field, in addition to three years in research, design, or development in digital image processing.” Pet. 11 (citing Ex. 1003 ¶ 70). Patent Owner agrees. Prelim. Resp. 6.

20010627233957/http://www.pima.net/standards/it10/PIMA15740/Exif_2-1.PDF (archived June 27, 2001), published by December 1998 (Ex. 1008).

For the purpose of institution, we adopt Petitioner’s definition of a person of ordinary skill in the art because it is consistent with the level of skill reflected by the ’109 Patent Specification and the asserted prior art.

C. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter 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 the subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) if in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).⁶

D. Patentability Challenge to Claims 1–3 over Onuki and Luo-668

1. Overview of Onuki (Ex. 1005)

Onuki “relates to an image recording/reproducing system including an image recording apparatus for acquiring an image in a particular fashion intended by the photographer.” Ex. 1005, 1:8–11. The image reproducing apparatus reproduces the image acquired by an image recording apparatus after processing the image in a desired fashion. *See id.* at 1:12–15. The recording/reproducing system comprises “recording means for setting a predetermined photo-taking condition according to selection of a photo-taking mode and recording an image on a recording medium in the photo-

⁶ At this stage, the parties do not present evidence or arguments regarding secondary considerations.

taking condition.” *Id.* at 2:31–36. The recording means also records information of the selected photo-taking mode on the recording medium. *See id.* at 2:36–37. The recording/reproducing system further comprises “image processing means for performing a process of varying the image on the basis of the photo-taking mode information recorded on the recording medium.” *Id.* at 2:38–40.

Figures 22 and 29 of Onuki are reproduced below.

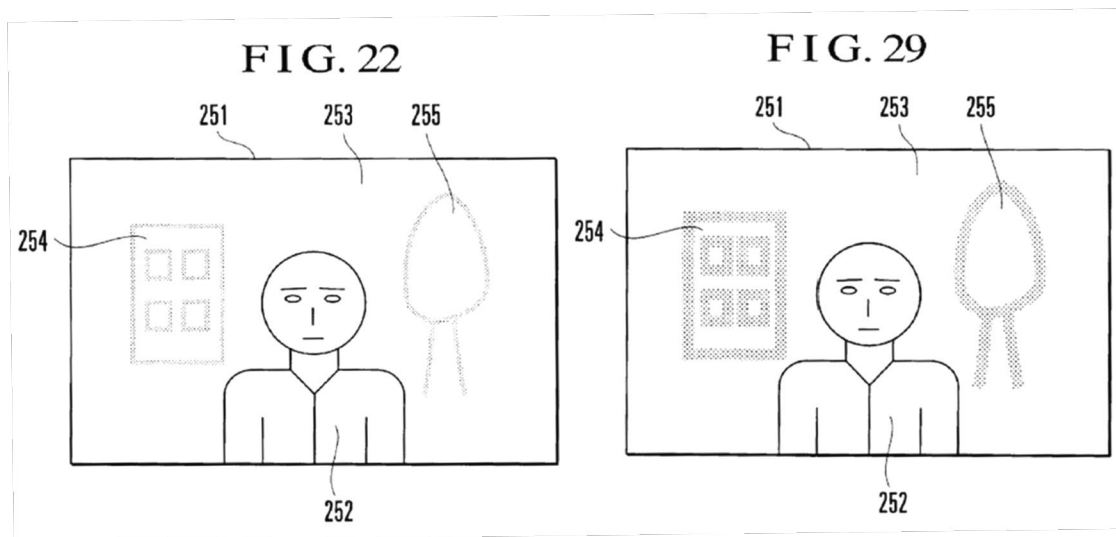


Figure 22 depicts an image with photo-taking image plane 251, photographed in the portrait mode, having main object image 252 that is in good focus and background images 253, 254, and 255 that are blurred. *See* Ex. 1005, 15:33–34, 18:17–22. Figure 29 depicts a final image obtained by means of the image processing performed by the image reproducing apparatus. *See id.* at 4:23–25, 20:60–65.

Figure 23 of Onuki is reproduced below.

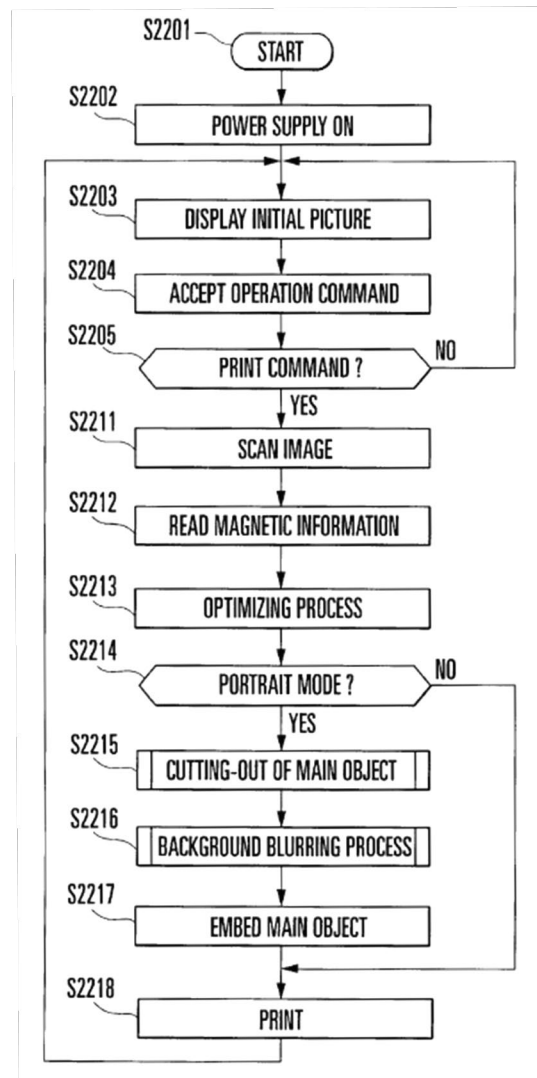


Figure 23 “is a flow chart illustrating a main control operation in an image reproducing apparatus.” Ex. 1005, 4:1–3. In this embodiment, the image processing and outputting operation includes step S2215 of a main-object cutting-out subroutine followed by step S2216 of a background blurring subroutine. *See id.* at 18:23–32. More particularly, at step S2214, it is determined that the image was photographed in the portrait mode, then at step S2215, the main object is separated from the background image so that the main object image is cut out, then at step S2216, the background image

remaining after the cutting-out of the main object image is subjected to a process for blurring the background image. *See id.* at 18:60–19:2. Then at step S2217, the main object image cut out in step S2215 is embedded into the background image that is subjected to the background blurring process in step S2216 to obtain a final image. *See id.* at 19:3–19:6.

Figures 25 and 26 of Onuki are reproduced below.

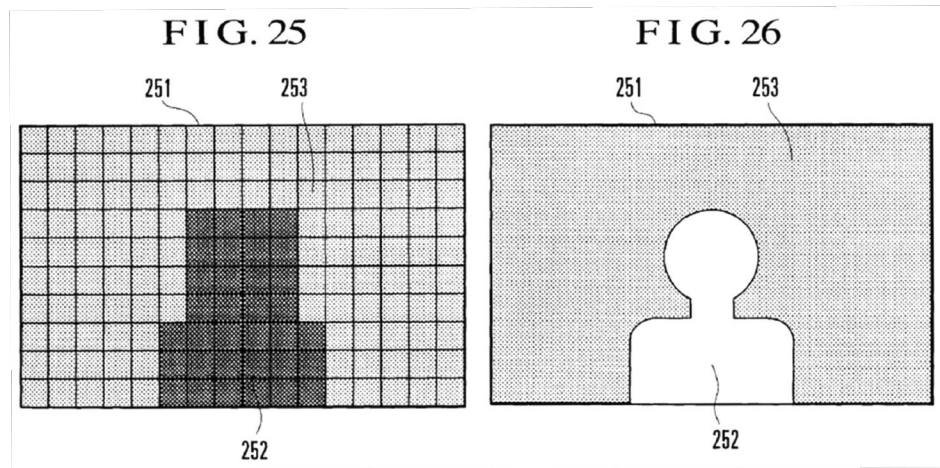


Figure 25 depicts an image obtained in the middle of the main-object cutting-out subroutine performed by the image reproducing apparatus and Figure 26 depicts a final image produced by the main-object cutting-out subroutine performed by the image reproducing apparatus. *See Ex. 1005, 4:12–15.* An image read by a film scanner is divided into small blocks shown in Figure 25 for the main-object cutting out subroutine which includes steps such as the blocks being Fourier transformed to perform spatial frequency and spatial frequency analysis (as shown in the flow chart depicted in Figure 24). *See id.* at 19:9–20:19. The background image shown in Figure 26 is processed using a matrix filter (shown in Figure 28) and then is embedded to the original location of the processed image, resulting in a final image shown in Figure 29 above. *See id.* at 20:60–65. Onuki discloses that

because information indicating the main object location on the image plane, inputted or detected when a picture was taken, is recorded together with an image and is supplied to an image reproducing apparatus, a main object can be precisely separated from a background, and thus it is possible to eliminate an error in a blurring enhancing process on the background image.

Id. at 22:5–11.

2. Overview of Luo-668 (Ex. 1006)

Luo-668 “relates to processing of images made up of pixels, and more particularly to processing image pixels to emphasize the main subject of the image.” Ex. 1006, 1:7–9. Luo-668 discloses “a system and method of modifying an image made up of pixels, by automatically identifying a main subject of the image and altering pixel values to emphasize the main subject.” *Id.* at 1:49–54. The method includes “altering pixel values in the main subject or altering pixel values in the background, or both.” *Id.* at 1:54–56. The main subject is identified by “segmenting the image into a plurality of regions based on uniform image characteristics.” *Id.* at 1:57–59. Further, a level of saliency for each of the plurality of regions is calculated and a belief value to the pixels corresponding to the levels of saliency of the image they are a part of is assigned. *See id.* at 1:59–62. A region of sharpness can be varied such as “blurring the background regions out of focus for the purpose of emphasizing the main subject, which remains in focus and has no blurring effect applied thereto.” *Id.* at 11:55–63. To accomplish this, the method includes the steps of “modifying the blur values of pixels in the digital image according to the belief values in such a way that the sharpness of main subject pixels is retained or increased, while the sharpness of the background is reduced, thereby blurring the background.” *Id.* at 11:64–12:4.

Figure 2 of Luo-668 is reproduced below.

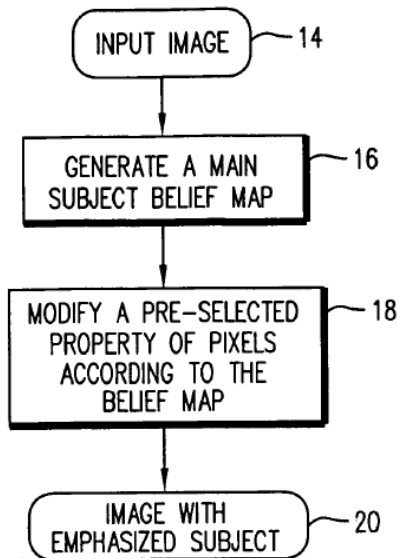


Figure 2 is a flow chart of a method that starts with step 14 in which an image comprising pixels is input to the process. *See* Ex. 1006, 9:4–6. Then, at step 16, a belief map is generated for the image and at step 18, the belief map is used as a reference for the modification of selected properties of the pixel color values. *See id.* at 9:7–10. Then the modified image is output at step 20. *See id.* at 9:10–11.

3. Analysis of Claim 1

For the reasons that follow, we are persuaded that Petitioner establishes sufficiently for the purpose of institution that the combined teachings of Onuki and Luo-668 teach or suggest all of the limitations recited in claim 1.

a. Preamble

Petitioner asserts that, “[t]o the extent the preamble is limiting, Onuki discloses or suggests ‘[a]n image processing apparatus’” based on Onuki’s disclosure of an image reproducing apparatus body. *See* Pet. 17–18 (reproducing Ex. 1003, Fig. 30 (with Petitioner’s annotations added); citing

Ex. 1003 ¶¶ 101–102; Ex. 1005, 4:38–42, 4:55–62, 6:38–41, 10:40–67, 18:23–19:6, 22:57–65, Fig. 1).

Patent Owner does not address Petitioner’s showing for the preamble. *See* Prelim. Resp. 15–18. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). At this stage of the proceeding, we need not determine whether the preamble is limiting because we determine Petitioner shows sufficiently for the purpose of institution that the preamble is satisfied by Onuki.

b. a CPU . . . executing functions including acquiring an image file, the image file including image data, shooting scene information, and location information of a person in the image data, and . . .

Petitioner asserts that Onuki discloses or suggests “a CPU . . . executing functions,” based on Onuki’s disclosure of the image reproducing apparatus including a CPU that executes functions because it includes a ROM, a RAM, and EEPROM, an A/D converter, and a D/A converter and is responsible for controlling operations over the entire image reproducing apparatus. *See* Pet. 19–21 (reproducing Ex. 1003, Figs. 23, 30 (with Petitioner’s annotations added); citing Ex. 1003 ¶¶ 103–105; Ex. 1005, 6:36–41, 10:40–67, 18:23–26, 18:41–19:6, 22:57–65, Fig. 23). Petitioner contends Onuki discloses or suggests that the CPU functions include acquiring an image file including image data, shooting scene information, and location information of a person in the image data based on Onuki’s disclosure of storing an image signal and photo-taking information together in a removable PC card. *See* Pet. 22–23 (citing Ex. 1003 ¶¶ 106–108; Ex. 1005, 6:38–41, 10:61–67, 18:50–51, 21:66–22:11, 22:18–25, 22:40–52, 22:57–65). Petitioner further asserts that Onuki’s electric signal

representing a photographed image discloses the claimed “image data.” *See* Pet. 23 (citing Ex. 1003 ¶ 109; Ex. 1005, 10:61–63, 22:40–52, 22:59–65). Petitioner further contends that Onuki’s photo-taking information includes a photo-taking mode which discloses the claimed “shooting scene information,” including an indication that the image was photographed in the portrait mode. *See id.* (citing Ex. 1003 ¶ 110; Ex. 1005, 15:19–23, 17:57–62, 18:53–55). Petitioner further asserts that Onuki’s photo-taking information includes a main object location which discloses the claimed “location information of a person in the image data.” *See* Pet. 24–25 (reproducing Ex. 1003, Fig. 21; citing Ex. 1003 ¶¶ 111–112; Ex. 1005, 3:61–64, 15:33–37, 17:57–18:10, 22:5–11, 22:57–65, Figs. 17, 22).

Patent Owner does not address Petitioner’s showing for these limitations of claim 1. *See* Prelim. Resp. 15–18. In any event, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. At this stage of the proceeding, we determine Petitioner shows sufficiently for the purpose of institution that these limitations are satisfied by the teachings of Onuki.

c. increasing sharpness of an area in which the person is located and decreasing sharpness of an area in which the person is not located based on the acquired location information when the acquired shooting scene information indicates a portrait scene.

Petitioner asserts that the combined teachings of Onuki and Luo-668 renders obvious “increasing sharpness of an area in which the person is located and decreasing sharpness of an area in which the person is not located based on the acquired location information when the acquired shooting scene information indicates a portrait scene.” *See* Pet. 26–34 (citing Ex. 1003 ¶¶ 121–131). More specifically, Petitioner

contends that Onuki discloses an image processing routine that decreases the sharpness of an area in which the person is not located based on the acquired main object location when the acquired photo-taking mode indicates a portrait mode. *See* Pet. 26–27 (reproducing Ex. 1005, Fig. 22; citing Ex. 1003 ¶ 122; Ex. 1005, 15:19–23, 15:33–37, 18:17–19, 18:23–20:67, Figs. 21–29). Petitioner asserts that Onuki discloses the CPU determines whether the image was photographed in portrait mode, and if so, divides the image into small blocks, performs spatial frequency analysis on each block, and based on the analysis, preliminarily identifies whether each block belongs to the main object image. *See* Pet. 27–28 (reproducing Ex. 1005, Fig. 25; citing Ex. 1003 ¶ 123; Ex. 1005, 6:39–42, 18:53–55, 18:60–65, 19:15–64, 21:40–48, 21:66–22:11, 22:59–65). Petitioner points out that Onuki’s apparatus determines which blocks corresponds to the main object location and extracts blocks which are more likely to belong to the main object image in accordance with the recorded main object location information and the main object location which has been detected. *See* Pet. 28–29 (citing Ex. 1003 ¶ 124; Ex. 1005, 19:45–20:9). Petitioner further points out that Onuki’s apparatus extracts a boundary line between the main object and the background, cuts out the main object from the photographed image, and subjects the background image remaining to a blurring process. *See* Pet. 29–31 (reproducing Ex. 1005, Figs. 26, 29; citing Ex. 1003 ¶¶ 124–126; Ex. 1005, 18:66–19:2, 19:65–20:23, 22:5–11).

Petitioner acknowledges that Onuki does not disclose increasing the sharpness of an area in which the person is located. *See* Pet. 31 (citing Ex. 1003 ¶ 127). Petitioner asserts that it would have been obvious to also increase the sharpness of an area in which the person is located in view of

the teachings of Luo-668. *See id.* (citing Ex. 1003 ¶ 127). According to Petitioner, “[l]ike Onuki, Luo-668 discloses ‘processing image pixels to emphasize the main subject of the image,’ including by ‘blurring the background regions out of focus.’” *Id.* (citing Ex. 1003 ¶ 127; Ex. 1006, 1:7–9, 11:59–63). Petitioner asserts that “unlike Onuki, Luo-668 explicitly discloses that further emphasis can be created by both ‘altering pixel values in the main subject’ and ‘altering pixel values in the background.’” *Id.* (citing Ex. 1003 ¶ 127; Ex. 1006, 1:50–56, 11:64–12:4). According to Petitioner, “Luo-668 discloses ‘modifying the blur values of pixels in the digital image’ so that ‘the sharpness of main subject pixels is ... increased, while the sharpness of the background is reduced, thereby blurring the background.’” *Id.* (citing Ex. 1003 ¶ 127; Ex. 1006, 11:64–12:4) (alteration in original).

Petitioner asserts that a person of ordinary skill in the art “would have been motivated to combine Onuki and Luo-668 to further emphasize the person that constitutes the main object in a photo taken in portrait mode by increasing the sharpness of the main object, including the area corresponding to the main object location.” Pet. 32 (citing Ex. 1003 ¶ 128); *see also* Pet. 33 (arguing a person of ordinary skill in the art would have been motivated to increase the sharpness of the main object to improve the clarity of the features of the main object and further emphasize the main object against the background; citing Ex. 1003 ¶ 129). In support, Petitioner asserts that “Onuki discloses that, in portrait mode, a main object should be ‘focused.’” Pet. 32 (citing Ex. 1003 ¶ 127; Ex. 1005, 15:21–23). According to Petitioner,

[e]ven if the photographer properly captured the main object in focus, the main object’s sharpness is limited by various factors,

including the type of lens, the resolution of the image sensor, and the amount of image compression used in the camera. . . . Increasing the sharpness was a well-known process used in digital image processing to make up for these shortcomings, and a POSITA would have been motivated to apply it when the portion of the image corresponding to the main object lacked the desired sharpness. . . . Doing so would have enhanced the appearance of the main object.

Id. (citing Ex. 1003 ¶ 128); *see also* Pet. 32–33 (providing several known reasons why some or all of the main object may be initially out of focus; citing Ex. 1005, 6:20–25, 8:49–59, 16:53–65). Petitioner also contends that

[a]dding Luo-668’s feature of increasing the sharpness of the main object would have been a combination of familiar elements according to known methods to yield predictable results, requiring a POSITA to apply only conventional image-sharpening techniques to the main object image cut out from the background to increase the sharpness of the main object.

Pet. 34 (citing Ex. 1003 ¶ 131).

In the Preliminary Response, Patent Owner contends that “the Petition fails to show that Luo-668 teaches or suggests increasing sharpness *based on acquired location information and when the acquired shooting scene information indicates a portrait scene.*” Prelim. Resp. 16. According to Patent Owner, “[t]he Petition overlooks the complete claim term, which requires not only increasing sharpness but increasing sharpness based on the acquired location information and when the acquired shooting scene information indicates a portrait scene.” *Id.* Patent Owner also argues that the Petition relies on hindsight and does not consider the invention as a whole. *Id.* at 17–18 (citing *Ruiz v. A.B. Chance Co.*, 357 F.3d 1270, 1275 (Fed. Cir. 2004)). Patent Owner further cites the Examiner’s reason for allowance of the ’109 Patent as relevant. *See id.* at 18 (citing Ex. 1002, 205).

More specifically, Patent Owner contends that “Luo-668 does *not* acquire information to inform its processing; it analyzes pixels, generates ‘belief maps,’ and computes and modifies, for example, blur values.” Prelim. Resp. 16 (citing Ex. 1006, 5:48–7:65, 11:55–12:4); *see id.* at 16–17 (citing Ex. 1006, 4:1–11, 11:64–12:4; Ex. 2001 ¶ 65). According to Patent Owner, “Luo-668 discloses analyzing pixels and performing extensive calculations to retain or increase sharpness; Luo-668 does not teach or suggest increasing sharpness *based on acquired information.*” *Id.* at 17 (citing Ex. 2001 ¶ 66). Patent Owner further contends that Onuki also does not teach or suggest processing an image area where a person is located based on acquired information. *See id.* at 18 (citing Ex. 2001 ¶ 67). According to Patent Owner, “Onuki describes *removing* the main object rather than process that image data.” *Id.* (citing Ex. 2001 ¶ 67).

At this stage of the proceeding, we do not agree with Patent Owner’s arguments because they are misplaced and address the teachings of Luo-668 and Onuki alone instead of addressing the teachings of Onuki and Luo-668, as combined by Petitioner. One cannot show non-obviousness by attacking references individually. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). In contrast to Patent Owner’s arguments addressing the references individually, Petitioner asserts that Onuki teaches decreasing sharpness in the area in which the person is not located based on the acquired location information when the acquired shooting scene information indicates a portrait scene, as modified in view of the teachings of Luo-668, to also include increasing the sharpness of an area in which the person or main subject is located. *See* Pet. 26–34. Per Petitioner’s proposed modification, we understand that the addition of increasing the sharpness of

an area in which a person is located would have been based on the acquired location information when the shooting scene information indicates a portrait scene because Onuki discloses separating the main object location from the background when a photo is taken in the portrait mode and recording information indicating the main object location together with the image. *See e.g.*, Pet. 27–30; Ex. 1005, 19:15–20:23, 22:5–11, Figs. 25–26.

To the extent Patent Owner suggests that Onuki teaches away from the combination because Onuki describes removing the main object from the image for processing rather than processing the main object of the image, at this stage of the proceeding we do not agree. A teaching of something different does not constitute a teaching away. “Under the proper legal standard, a reference will teach away when it suggests that the developments flowing from its disclosures are unlikely to produce the objective of the applicant’s invention.” *Syntex (U.S.A.) LLC v. Apotex, Inc.*, 407 F.3d 1371, 1380 (Fed. Cir. 2005) (citing *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994)). As pointed out by Petitioner, a person of ordinary skill in the art would have had a reasonable expectation of success in combining the teachings of Onuki and Luo-668 because Onuki discloses the main object image is cut out from the background and saved, which would allow for an increase in the sharpness of the pixels constituting the main object image. *See* Pet. 34 (citing Ex. 1005, 20:62–65).

Accordingly, at this stage of the proceeding, we determine Petitioner shows sufficiently that the combined teachings of Onuki and Luo-668 teach or suggest this limitation of claim 1.

d. Summary for Claim 1 Analysis

For all of the foregoing reasons, for the purpose of institution and based on the record before us, Petitioner establishes sufficiently that the subject matter of claim 1 would have been obvious over Onuki and Luo-668.

4. Analysis of Independent Claims 2 and 3

Independent claim 2 directed to “[a] method of image processing” and independent 3 directed to “[a] computer program product” recite limitations similar in scope to claim 1. *Compare* Ex. 1001, 15:6–16 *and* Ex. 1001, 16:1–13, *with* Ex. 1001, 14:63–15:5. Petitioner relies primarily on its analysis addressing claim 1 to address the limitations of claims 2 and 3. *See* Pet. 34–41. Patent Owner relies on its arguments addressing claim 1 to address the same disputed limitation recited in claims 2 and 3. *See* Prelim. Resp. 18–19.

For the same reasons as those explained above addressing claim 1, for the purpose of institution and based on the record before us, Petitioner establishes sufficiently that the subject matter of claims 2 and 3 would have been obvious over Onuki and Luo-668.

5. Summary

For all of the foregoing reasons and based on the record before us, we determine there is a reasonable likelihood Petitioner would prevail in showing that claims 1–3 are unpatentable under 35 U.S.C. § 103 over Onuki and Luo-668.

E. Patentability Challenge to Claims 1–3 over Onuki, Luo-668, and Exif

1. Overview of Exif (Ex. 1008)

Exif is directed to a digital still camera image file format standard. *See* Ex. 1008, 3.⁷ Exif discloses that depending on the image data type, the image data can employ the following existing image formats: RGB uncompressed data, YCbCr uncompressed data, and JPEG compressed data. *See id.* at 17.

Figure 6 of Exif is reproduced below.

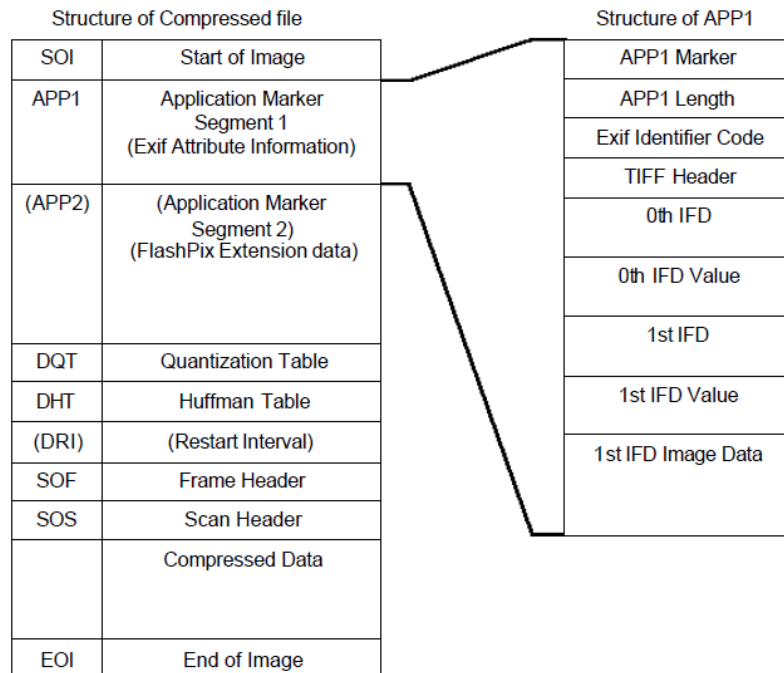


Fig. 6 Basic Structure of Compressed Data Files

Figure 6 shows the basic structure of a JPEG compressed data file. *See* Ex. 1008, 20. Exif discloses that tags can be used to identify different fields. *See id.* at 24. As an example, a tag can be used to identify a portrait mode for close up photos with the background out of focus. *See id.* at 55.

⁷ We refer to Petitioner’s added exhibit page numbers at the bottom left corner of each page.

2. Analysis

Petitioner adds the teachings of Exif to the combined teachings of Onuki and Luo-668 to address the possibility that Patent Owner would argue or the Board would find that Onuki does not disclose, teach, or suggest “acquiring an image file, the image file including image data, shooting scene information, and location information of a person in the image data,” as recited in claims 1–3. *See* Pet. 45–50. As explained above in Section II.D.3.b., Patent Owner does not dispute that this limitation is taught by Onuki, and we determine Petitioner shows sufficiently for the purpose of institution that this limitation is satisfied by the teachings of Onuki. Patent Owner repeats its arguments that the combination of Onuki and Luo-668 do not teach or suggest “increasing sharpness of an area in which the person is located and decreasing sharpness of an area in which the person is not located based on the acquired location information when the acquired shooting scene information indicates a portrait scene.” *See* Prelim. Resp. 20–22.

As set forth in the detailed analysis in Section II.D., we determine that Petitioner demonstrates a reasonable likelihood of prevailing in showing claims 1–3 are unpatentable under 35 U.S.C. § 103 as obvious over Onuki and Luo-668. *See* 35 U.S.C. § 314; 37 C.F.R. § 42.4(a). Accordingly, we institute an *inter partes* review of all of the challenged claims on all of the grounds articulated in the Petition, including the patentability challenges to claims 1–3 based on Onuki, Luo-668, and Exif. *See SAS Inst. Inc. v. Iancu*, 584 U.S. 357 (2018).

III. CONCLUSION

For the foregoing reasons, we determine there is a reasonable likelihood that Petitioner would prevail in showing at least one of the challenged claims of the '109 Patent is unpatentable.

IV. ORDER

In consideration of the foregoing, it is hereby

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–3 of the '109 Patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '109 Patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

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