

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD. AND SAMSUNG ELECTRONICS
AMERICA, INC.,
Petitioner,

v.

Optimum Imaging Technologies LLC,
Patent Owner.

Case IPR2024-00463

Patent No. 10,877,266

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 10,877,266**

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Exhibit	Description
EX1001	U.S. Pat. No. 10,877,266 (“the ’266 patent”)
EX1002	Prosecution History of the ’266 patent
EX1003	Declaration of Dr. Robert L. Stevenson
EX1004	U.S. Pat. No. 5,477,264 (“Sarbadhikari”)
EX1005	Certified English Translation of Japanese Pat. App. Pub. No. 2000-41179 (“Iwasawa”)
EX1006	Certified English Translation of Japanese Pat. App. Pub. No. 2004-289225 (“Katagiri”)
EX1007	U.S. Pat. App. Pub. No. 2002/0113884 A1 (“Tanii”)
EX1008	Certified English Translation of Japanese Pat. App. Pub. No. 2005-25703 (“Yamada”)
EX1009	Certified English Translation of Japanese Pat. App. Pub. No. 2004-320567 (“Uchino”)
EX1010	International Pat. App. Pub. No. WO 2005/065283 (“Walker”)
EX1011	U.S. Pat. App. Pub. No. 2005/0001024 (“Kusaka”)
EX1012	U.S. Pat. App. Pub. No. 2006/0274170 (“Azuma”)
EX1013	U.S. Pat. App. Pub. No. 2004/0080621 (“Fisher”)
EX1014	Kodak EasyShare-One User’s Guide (“Kodak EasyShare”)
EX1015	U.S. Pat. No. 6,603,885 (“Enomoto”)
EX1016	U.S. Pat. No. 6,360,362 (“Fichtner”)
EX1017	U.S. Pat. App. Pub. No. 2004/0150726 (“Gallagher”)
EX1018	U.S. Pat. App. Pub. No. 2002/0135688 (“Niikawa”)

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EX1019	U.S. Pat. No. 7,245,319 (“Enomoto II”)
EX1020	U.S. Pat. No. 5,227,832 (“Kawasaki”)
EX1021	U.S. Pat. App. Pub. No. 2005/0280877 (“Watanabe”)
EX1022	U.S. Pat. App. Pub. No. 2004/0239771 (“Habe”)
EX1023	U.S. Pat. App. Pub. No. 2004/0189825 (“Kawashima”)
EX1024	U.S. Pat. No. 5,596,387 (“Takagi”)
EX1025	U.S. Pat. App. Pub. No. 2002/0015111 (“Harada”)
EX1026	U.S. Pat. App. Pub. No. 2004/0263887 (“Kotani”)
EX1027	U.S. Pat. App. Pub. No. 2005/0168591 (“Proidl”)
EX1028	U.S. Pat. App. Pub. No. 2003/0071905 (“Yamasaki”)
EX1029	U.S. Pat. No. 4,453,811 (“Yamasaki II”)
EX1030	U.S. Pat. No. 5,510,837 (“Takei”)
EX1031	U.S. Pat. App. Pub. No. 2004/0005915 (“Hunter”)
EX1032	U.S. Pat. App. Pub. No. 2004/0109063 (“Kusaka II”)
EX1033	U.S. Pat. App. Pub. No. 2002/0044157 (“Wolf”)
EX1034	U.S. Pat. App. Pub. No. 2004/0201688 (“Wolf II”)
EX1035	U.S. Pat. App. Pub. No. 2005/0008236 (“Hachiyama”)
EX1036	U.S. Pat. App. Pub. No. 2003/0017846 (“Estevez”)
EX1037	U.S. Pat. No. 7,936,392 (“Ng”)
EX1038	Certified English Translation of Japanese Pat. App. Pub. No. H06-113309 (“Ito”)
EX1039	Prosecution History of U.S. Pat. No. 8,451,339 (the “’339 patent”)

Exhibit	Description
EX1040	U.S. Pat. No. 7,683,950 (“Kelly”)
EX1041	U.S. Pat. No. 5,414,782 (“Carasso”)
EX1042	U.S. Pat. No. 4,903,204 (“Dobbins”)
EX1043	U.S. Pat. No. 6,791,608 (“Miyazawa”)
EX1044	U.S. Pat. App. Pub. No. 2002/0158977 (“Hamilton”)
EX1045	U.S. Pat. App. Pub. No. 2004/0080636 (“Dong”)
EX1046	U.S. Pat. No. 6,611,288 (“Fossum”)
EX1047	U.S. Pat. No. 5,805,216 (“Tabei”)
EX1048	U.S. Pat. App. Pub. No. 2002/0093577 (“Kitawaki”)
EX1049	U.S. Pat. App. Pub. No. 2006/0050158 (“Irie”)
EX1050	U.S. Pat. No. 5,382,976 A (“Hibbard”)
EX1051	U.S. Pat. App. Pub. No. 2001/0008418 (“Yamanaka”)
EX1052	U.S. Pat. No. 6,590,617 (“Kanai”)
EX1053	U.S. Pat. App. Pub. No. 2004/0179131 (“Honda”)
EX1054	U.S. Pat. No. 4,423,936 (“Johnson”)
EX1055	U.S. Pat. No. 6,151,171 (“Kenin”)
EX1056	U.S. Pat. App. Pub. No. 2004/0066980 (“Gindele”)
EX1057	U.S. Pat. App. Pub. No. 2003/0052988 (“Kurosawa”)
EX1058	U.S. Pat. No. 6,900,841 (“Mihara”)
EX1059	U.S. Pat. App. Pub. No. 2004/0228005 (“Dowski”)
EX1060	U.S. Pat. No. 6,920,443 (“Cesare”)

Exhibit	Description
EX1061	U.S. Pat. No. 6,301,440 (“Bolle”)
EX1062	U.S. Pat. App. Pub. No. 2004/0032490 (“Uchida”)
EX1063	U.S. Pat. App. Pub. No. 2004/0165101 (“Miyanari”)
EX1064	U.S. Pat. App. Pub. No. 2005/0231615 (“Kitani”)
EX1065	U.S. Pat. No. 6,323,934 (“Enomoto III”)
EX1066	Japanese Pat. App. Pub. No. 2000-41179 (“Iwasawa-JP”)
EX1067	RESERVED
EX1068	Japanese Pat. App. Pub. No. 2005-25703 (“Yamada-JP”)
EX1069	Japanese Pat. App. Pub. No. 2004-320567 (“Uchino-JP”)
EX1070	Japanese Pat. App. Pub. No. H06-113309 (“Ito-JP”)
EX1071	Japanese Pat. App. Pub. No. 2004-289225 (“Katagiri-JP”)
EX1072	Certified English Translation of Japanese Pat. App. Pub. No. H11-205652 (“Ichiyama”)
EX1073	Japanese Pat. App. Pub. No. H11-205652 (“Ichiyama-JP”)
EX1074	U.S. Pat. No. 3,522,764 (“Biber”)
EX1075	U.S. Pat. No. 5,752,115 (“McIntyre”)
EX1076	U.S. Pat. App. Pub. No. 2003/0098914 (“Easwar”)
EX1077	Curriculum Vitae of Dr. Robert L. Stevenson
EX1078	RESERVED

LIST OF CHALLENGED CLAIMS

Identifier	Claim Language
[1PRE]	A method of processing one or more images with a digital camera, comprising:
[1A-1]	digitally processing at least one captured image, the processing using in-camera hardware and software that is configured to:
[1A-2]	perform a plurality of image correction algorithms,
[1A-3]	process image correction data stored in a database system,
[1A-4]	receive updated software and image correction data, and,
[1A-5]	upgrade the digital camera with the updated software and image correction data;
[1B]	storing in memory one or more corrected images resulting from digitally processing the at least one captured image; and;
[1C]	wirelessly transmitting at least one of the one or more corrected images,
[1D]	wherein the in-camera software and database system are upgradable to provide improved algorithms and correction data for correction of images.
[2]	The method of claim 1, wherein the digitally processing at least one captured image further comprises: electronically reading stored user-adjustable variables; and processing image corrections using the user-adjustable variables.
[3]	The method of claim 2, wherein the user-adjustable variables include an aperture setting.
[4]	The method of claim 2, wherein the user-adjustable variables include lens data.
[5]	The method of claim 2, wherein the user-adjustable variables include shutter speed settings.

Identifier	Claim Language
[6]	The method of claim 2, wherein the user-adjustable variables include ISO settings.
[7]	The method of claim 2, wherein the user-adjustable variables include subject type.
[8]	The method of claim 2, wherein the user-adjustable variables include tonal range corrections.
[9]	The method of claim 2, wherein the user-adjustable variables include filter settings.
[10]	The method of claim 2, wherein the user-adjustable variables include special effects.
[11]	The method of claim 1, wherein the digitally processing the at least one captured image for image correction further comprises adjusting a depth of field of an image.
[12]	The method of claim 1, further comprising adjusting a depth of field of an image after capture of the image using the in-camera software.
[13]	The method of claim 1, wherein the in-camera software processes image corrections based on one or more prior image corrections.
[14]	The method of claim 1, further comprising changing a variable based on an auto-focus process performed by the camera and electronically storing that changed variable.
[15]	The method of claim 1, further comprising changing a variable based on an auto-exposure process performed by the camera and electronically storing that changed variable.
[16]	The method of claim 1, further comprising changing a variable based on a depth of field adjustment process performed by the camera and electronically storing that changed camera variable.
[17]	The method of claim 14, further comprising digitally processing the at least one captured image using the in-camera software to correct

Identifier	Claim Language
	at least one optical image aberration associated with an optical system and the changed camera variable.
[18]	The method of claim 15, further comprising digitally processing the at least one image using the in-camera software to correct at least one optical image aberration associated with an optical system and the changed camera variable.
[19]	The method of claim 16, further comprising digitally processing the at least one image using the in-camera software to correct at least one optical image aberration and the changed camera variable.
[20]	The method of claim 1, wherein the wirelessly transmitting images includes automatically transmitting the at least one of the one or more corrected images.
[21]	The method of claim 1, wherein the image processing algorithms include a fast Fourier transform.
[22PRE]	A method of displaying one or more images captured by a digital camera on an external monitor, comprising:
[22A-1]	digitally processing at least one captured image to produce one or more corrected image, the processing using in-camera hardware and software that is configured to:
[22A-2]	perform a plurality of image correction algorithms,
[22A-3]	process image correction data stored in a database system,
[22A-4]	store updated software or image correction data or both, and,
[22A-5]	upgrade the digital camera with the updated software or image correction data or both; and
[22B]	wirelessly transmitting at least one of the one or more corrected images in a format that the external monitor can receive,

Identifier	Claim Language
[22C]	wherein the in-camera software and database system are upgradable to provide improved algorithms and correction data for correction of images.
[23]	The method of claim 22, wherein the digitally processing at least one captured image further comprises: electronically reading stored user-adjustable variables; and processing image corrections using the user-adjustable variables.
[24]	The method of claim 22, wherein the user-adjustable variables include aperture settings, lens data, shutter speed settings, and ISO settings.
[25]	The method of claim 22, wherein the digitally processing the at least one captured image for image correction further comprises adjusting a depth of field of an image.
[26]	The method of claim 22, further comprising adjusting a depth of field of an image after capture of the image using the in-camera software.
[27]	The method of claim 22, wherein the in-camera software processes image corrections based on one or more prior image corrections.
[28]	The method of claim 1, further comprising: detecting dust on the digital image sensor; and digitally correcting for dust on a digital image sensor of the digital camera.
[29]	The method of claim 1, further comprising: correcting for a dead pixel on a digital image sensor of the digital camera.
[30]	The method of claim 1; further comprising: digitally processing a plurality of images to correct video taken by the digital camera; and storing a plurality of corrected images.

I. Relation to Earlier-Filed IPR Proceeding.

This Petition presents the same arguments and evidence presented in IPR2024-01374. Should trial be instituted in that proceeding, Petitioner intends to file a motion for joinder to simplify matters.

II. Introduction

Petitioner respectfully requests *inter partes* review of claims 1-30 (“Challenged Claims”) of U.S. Patent No. 10,877,266, which is assigned to Optimum Imaging Technologies LLC (“OIT” or “Patent Owner”).

The ’266 patent is part of OIT’s campaign to sue essentially the entire digital camera industry with patents claiming decades-old technology as “inventions.” It issued from an application filed in November 2019—after OIT already sued Canon on related patents—claiming priority to a 2006 patent application. The claims recite in-camera image correction software and data which are “upgradable” to provide improved algorithms and correction data.

But this type of digital camera was invented long before, including as described in Sarbadhikari, a patent assigned to Kodak and issued in 1995. Sarbadhikari recognized that “the operation of the camera or playback device can be improved some years after the camera is purchased by using an ‘enhanced’ memory card containing improved software for operating the camera” such as updated algorithms, along with updated data files “capable of upstream

modification of image data.” EX1004, 3:9-20, 4:37-56. Sarbadhikari, which was not before the Examiner during the ’266 patent’s prosecution, discloses the core concepts claimed in the ’266 patent. The remaining elements of the Challenged Claims are just techniques that had long been well-known and understood in digital cameras, like wireless transmission of image data and using a fast Fourier transform. A person having ordinary skill in the art (“POSA”) would have found it obvious to modify the camera taught by Sarbadhikari by adding these conventional techniques, yielding the ’266 patent’s claimed subject matter.

III. Requirements For IPR

A. Standing

Petitioner certifies that the ’266 patent is available for IPR, and that Petitioner is not barred or estopped from requesting this review.

B. Challenge and Relief Requested

Petitioner relies on the following references: Sarbadhikari (EX1004), issued December 19, 1995; Katagiri (EX1006), published October 14, 2004; Iwasawa (EX1005), published February 8, 2000; Yamasaki (EX1028), published April 17, 2003; Gindele (EX1056), published April 8, 2004; Ito (EX1038), published April 22, 1994; Miyazawa (EX1043), issued September 14, 2004; and Hamilton (EX1044), published October 31, 2002. As these references all predate the ’266

patent's earliest priority claim (July 11, 2006) by at least one year and are prior art at least under pre-AIA 35 U.S.C. §102(b).

Petitioner requests that the Challenged Claims be determined unpatentable and cancelled on these grounds:

Ground 1: Claims 1-2, 9-10, 20 and 22-23 are unpatentable as obvious in view of Sarbadhikari and Katagiri.

Ground 2: Claims 2-10, 13-19, 24, 27 and 30 are unpatentable as obvious in view of Sarbadhikari, Katagiri and Iwasawa.

Ground 3: Claims 8, 13 and 27 are unpatentable as obvious in view of Sarbadhikari, Katagiri and Gindele.

Ground 4: Claims 11-12 and 25-26 are unpatentable as obvious in view of Sarbadhikari, Katagiri and Yamasaki.

Ground 5: Claim 21 is unpatentable as obvious in view of Sarbadhikari, Katagiri and Ito.

Ground 6: Claim 28 is unpatentable as obvious in view of Sarbadhikari, Katagiri and Miyazawa.

Ground 7: Claim 29 is unpatentable as obvious in view of Sarbadhikari, Katagiri and Hamilton.

This Petition is supported by the Declaration of Dr. Robert L. Stevenson.
EX1003.

IV. Overview Of The '266 Patent

A. Summary

The '266 patent teaches using in-camera hardware and software to perform image corrections that were conventionally performed by optical filters or by external software. EX1001, 6:42-54, 7:27-40, 8:14-19, 13:1923; EX1003, ¶76.

The specification discloses various image corrections, *e.g.*, lens aberration corrections (EX1001, 30:58-31:32), tonal range correction (EX1001, 14:15-67, 33:12-19), depth of field adjustment (EX1001, 13:31-14:14, 33:6-11), sensor dust correction (EX1001, 33:62-34:4) and sensor dead pixel correction. EX1001, 17:415; EX1003, ¶77.

The '266 patent also discloses features of updating a camera's software and correction data and wirelessly transferring images stored in the camera to external devices. EX1001, 29:10-20, 36:61-37:5; EX1003, ¶78. The '266 patent briefly explains that the in-camera software may be updated with improved algorithms to improve the image correction functions, thereby avoiding a need to upgrade hardware. EX1001, 8:4-8, 29:16-24, 32:40-49; EX1003, ¶78.

B. Prosecution History

The '266 patent issued without rejection from Track 1 application 16/692,972 filed as a continuation of applications of U.S. Patent Nos. 10,873,685, 8,451,339 and 7,612,805. EX1002, 149-165, 452-464, 1204-1215. The Examiner issued a notice of

allowance just two months after filing without issuing an office action. EX1002, 42-49.

Sarbadhikari, Katagiri, Iwasawa, Yamasaki, Gindele, Ito, Miyazawa, and Hamilton were not cited during prosecution.

C. Priority Date

For purposes of this proceeding only, Petitioner assumes that the provisional application's filing date, July 11, 2006, is the priority date. This is before March 16, 2013, so the pre-AIA statute applies.

D. Level of Ordinary Skill in the Art

A POSA would have had a bachelor's degree in electrical engineering, physics, or related field, with at least two years of industry experience and/or research, both concerning digital camera system design and image processing. EX1003, ¶34.

E. Claim Construction

Petitioner believes that the plain and ordinary meanings suffice and no further constructions are needed to resolve the issues presented.

V. Prior Art Overview

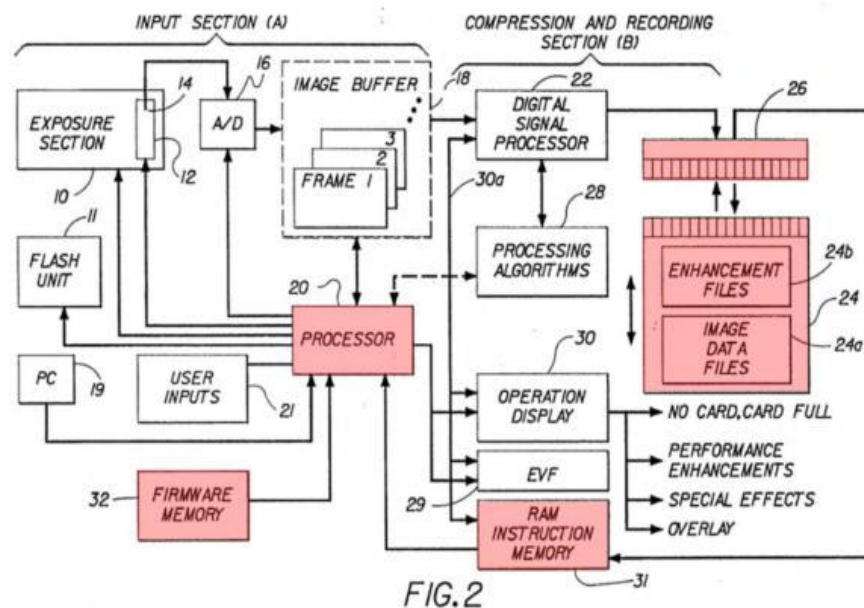
A. Sarbadhikari

Sarbadhikari teaches a digital electronic camera that captures, corrects, and stores images in a removable storage device. EX1003, ¶85. Sarbadhikari noted that “[a]n electronic camera can use a programmable digital processor controlled by

software,” affording “an opportunity for software updates” and recognized a need for “software updates of the camera algorithms.” EX1004, 2:29-38; EX1003, ¶86. Sarbadhikari describes a solution in which the removable storage device “is also preloaded with enhancement files for effecting the operation of the system.” EX1004, Abstract; EX1003, ¶86. “These files may contain software for updating the operating code of the camera” or “for modifying the electrically captured image.”

Id.

Sarbadhikari illustrates its camera in Figure 2.



EX1004, Fig. 2.

Sarbadhikari’s camera has an input section A and a compression and recording section B. EX1004, 5:55-59, Fig. 2; EX1003, ¶86. The input section A has, *inter alia*, an exposure section 10 for regulating aperture and shutter (exposure time). EX1004, 5:59-65; EX1003, ¶86. The images captured by the image sensor 12

are sent to removable storage (*e.g.*, memory card 24) via an interface 26. EX1004, 6:27-53; EX1003, ¶86. Images are transmitted from the camera to an external computer via the removable memory, rather than a cable interface. EX1004, 8:23-26; EX1003, ¶86.

Sarbadhikari also teaches a programmed control processor which controls exposure settings. EX1004, 6:13-18; EX1003, ¶87. A firmware memory 32 stores firmware algorithms and a RAM instruction memory 31 downloads “enhancement files 24b” from memory card 24. EX1004, 7:51-8:3, Fig. 2; EX1003, ¶86. The “enhancement files” include capture parameters (*e.g.*, exposure time, aperture setting and ISO settings) (EX1004, 5:11-15, 9:51-10:1; EX1003, ¶88), image processing software, look-up tables, matrices, dynamic range optimization tables, and other files used to affect captured image (EX1004, 4:57-63; EX1003, ¶88) and parameters for enhancing color (*e.g.*, skin tones, edge sharpness and aliasing). EX1004, 8:61-9:1; EX1003, ¶88.

Sarbadhikari uses the enhancement files stored in the memory card to perform software updates in the camera. EX1004, 5:34-40; EX1003, ¶89. As a result, Sarbadhikari executes new or improved algorithms to produce images with higher quality or special features. EX1004, 7:65-67; EX1003, ¶89.

B. Katagiri

Katagiri teaches a surveillance camera that performs various image corrections (*e.g.*, white balance, black level, gamma correction and distortion correction) (EX1006, [0049], [0053]), and transmits corrected image to an external device (*e.g.*, personal computer or mobile phone) using a wireless network (*e.g.*, wireless LAN). EX1006, [0020]-[0025], [0082]-[0083], [0087]-[0088], Fig. 1; EX1003, ¶90.

C. Iwasawa

Iwasawa teaches a digital camera with shading correction capability for captured images based on program and shading correction data corresponding to aperture value, zoom position, and lens type stored in RAM. EX1005, [0001], [0019]-[0021], [0027], Fig. 2; EX1003, ¶91.

D. Yamasaki

Yamasaki teaches a digital camera that digitally separates the principal object from the background in a captured image and applies a blur filter process to the background. EX1028, [0053], [0068], [0076], [0085], [0102], [0115]; EX1003, ¶93.

E. Gindele

Gindele discloses a digital camera in which a digital image processor 20 applies a series of image corrections including a tone scale function to generate a tonally enhanced digital image. EX1056, [0044], [0045]; EX1003, ¶94. Gindele discloses that the tonal range corrections are adjusted by a user and the correction

data are stored in a look-up-table. EX1056, [0078], [0138], [0046], [0093], [0124], [0128], Fig. 4; EX1003, ¶94.

F. Ito

Ito discloses a digital video camera performing chromatic aberration corrections based on the correction values corresponding to focal length stored in a memory. EX1038, [0010]; EX1003, ¶95. Ito also teaches using a fast Fourier transform to digitally process chromatic aberration correction. EX1038, [0017], [0020]; EX1003, ¶95.

G. Miyazawa

Miyazawa teaches a solution to problems affecting digital cameras using interchangeable lenses of “dirt” or “dust” adhering to an image sensor. EX1043, 1:16-60, 4:8-33; EX1003, ¶97. Miyazawa teaches using a CPU to digitally correct image failures based on the dirt position and the picture element defect positions stored in a memory (116, 117). EX1043, 4:8-33; EX1003, ¶98.

H. Hamilton

Hamilton teaches an electronic camera that corrects images having corrupted data due to defective pixels on an image sensor. EX1044, [0004], [0019]; EX1003, ¶99. Hamilton uses a defect map to identify the position of a defective pixel and replace the corrupted data caused by the defective pixel with the non-corrupted data in the neighboring non-corrupted pixel to correct the image. EX1044, [0006]-[0010]; EX1003, ¶100.

VI. Ground 1: Claims 1-2, 9-10, 20 And 22-23 Are Obvious Over Sarbadhikari And Katagiri

A. Motivation to Combine

Sarbadhikari and Katagiri are analogous art to the '266 patent. Sarbadhikari teaches an electronic camera that performs image processing algorithms (*e.g.*, color filter array interpolation, noise reduction, edge sharpening, color reproduction and dynamic range optimization algorithms) to modify or correct captured images and store the corrected images in a removable storage device, which is used to transfer the images “from the camera to the computer via the removable memory, rather than a cable interface.” EX1004, 8:20-32; EX1003, ¶103.

Katagiri teaches a camera that performs image corrections such as white balance, gamma, black level and distortion corrections for a captured image and transfers the corrected images via wireless LAN. EX1006, [0049], [0053], [0020]-[0025], [0082]-[0083], [0087]-[0088], Fig. 1; EX1003, ¶¶90, 104.

Sarbadhikari and Katagiri are analogous art to the '266 patent *i.e.*, digital image processing techniques, such as image correction, for imaging systems like electronic cameras (EX1001, 7:17-21) and are pertinent to the problem that the '266 patent sought to solve because the '266 patent was designed to improve image quality by applying in-camera digital filters to digitally correct captured images (EX1001, 7:33-47), update software to improve camera (EX1001, 29:10-24), and wirelessly transfer the corrected image data from the camera to an external device.

EX1001, 36:61-37:5, Fig. 34; EX1003, ¶¶103, 104. Sarbadhikari, Katagiri, and the '266 patent list the H04N subclass under the International Classification. EX1003, ¶104.

A POSA would have understood the benefit of adding Katagiri's communication network to Sarbadhikari's camera to facilitate the transmission of the corrected image between Sarbadhikari's camera and an external device as Sarbadhikari sought to make it possible to view images from the camera in different locations on different computers (EX1004, 8:24-32), and the addition of Katagiri's communication network to Sarbadhikari's camera would make image transmission faster and easier than using the removable memory card. EX1006, [0024], [0025], [0118]; EX1003, ¶¶43-44, 105.

It was well-known in the art to use wireless connection to transfer images between a camera and an external device by the time of the '266 patent's claimed inventions. *See* EX1007, [0044], [0060]; EX1008, [0044]; EX1009, [0009], [0011], [0016], [0019], [0025], [0027], [0031]-[0033], [0036], [0046], [0054], [0056]-[0058]; EX1010, [0173], [0176], [0180]; EX1011, [0015], [0157], [0158]; EX1012, [0292], [0306]; EX1013, [0011], [0026], [0034]; EX1014, pp. 46-51; EX1017, [0020], [0022], Fig. 1; EX1003, ¶107.

Thus, this modification is an example of using a known technique to improve similar devices in the same way and applying a known technique to a known device

ready for improvement to yield predictable results. EX1003, ¶107. Nothing in Sarbadhikari or Katagiri would have discouraged a POSA from this modification.

Id.

A POSA would have had a reasonable expectation of success with conventional skills to modify Sarbadhikari's camera by adding Katagiri's communication network (*e.g.*, wireless LAN) to wirelessly transfer a corrected image to an external device. EX1003, ¶106. A POSA would have simply added Katagiri's communication network (*e.g.*, wireless LAN) to Sarbadhikari's camera to wirelessly transfer the corrected, compressed and stored images to an external device, which would have been well within the ability of a POSA given the prevalence and well-understood nature of wireless communication. EX1003, ¶106.

B. Claim 1

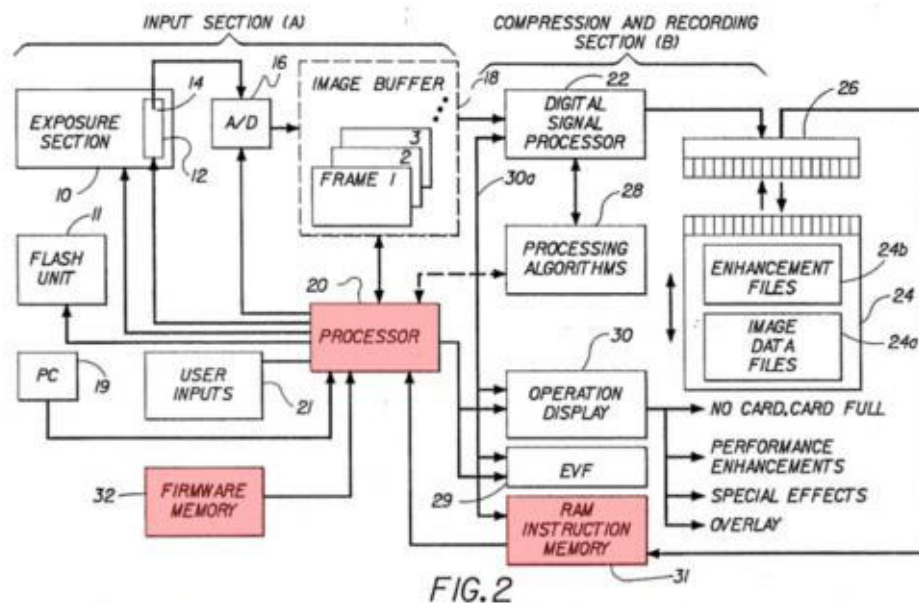
1. [1PRE]: “A method of processing one or more images with a digital camera, comprising:”

Sarbadhikari teaches an electronic camera including “an optical section for establishing the optical parameters of image capture, an image sensing section for electrically capturing an image provided by the optical section, a signal processing section for processing the electrically captured image, a programmable processor for controlling the sections of the system, and means for loading the programmable processor with the software preloaded in the removable storage device for affecting

operation of one or more of the sections of the system.” EX1004, 2:56-65, Fig. 25; EX1003, ¶110.

2. [1A-1]: “digitally processing at least one captured image, the processing using in-camera hardware and software that is configured to:”

Sarbadhikari discloses an electronic camera in which a programmable digital processor is controlled by software. EX1004, 2:33-35; EX1003, ¶113. Sarbadhikari explains and illustrates in Figure 2 its in-camera hardware and software components. EX1004, Fig. 2; EX1003, ¶113.



EX1004, Fig. 2

Sarbadhikari explains that the programmed control processor 20 controls input section A, exposure section 10, A/D converter 16, image buffer 18 and digital signal processor 22. EX1004, 6:11-40, Fig. 2; EX1003, ¶114. Sarbadhikari further teaches firmware memory 32 with operating code for the camera, and RAM

instruction memory 31 connected to receive code from memory card 24. EX1004, 7:31-50; EX1003, ¶115. “When the memory card 24 is inserted into the camera, the processor 20 uses the firmware algorithms in the memory 32 to determine if the memory card 24 contains ‘software enhancements’ which can be used by the camera.” EX1004, 7:51-67; EX1003, ¶115. “If the card does contain appropriate ‘software enhancements’, however, these are downloaded from the enhancement file section 24b of the card 24 to the RAM instruction memory 31 and used by the programmable processor 20 in place of some portion of the firmware algorithms supplied with the camera from the firmware memory 32.” EX1004, 7:60–65; EX1003, ¶115. “In this way the camera can execute new, improved algorithms which provide higher quality pictures or special features.” EX1004, 7:65-67; EX1003, ¶115.

A POSA would have understood that Sarbadhikari’s firmware memory 32 and RAM instruction memory 31, along with control processor 20, A/D converter 16, image buffer 18 and digital signal processor 22, are the in-camera hardware recited in [1A-1], and Sarbadhikari’s operating code, firmware algorithms, and software enhancements are the in-camera software recited in [1A-1]. EX1003, ¶¶114, 116. A POSA would also have understood that Sarbadhikari’s programmable processor 20 uses “software enhancements” with “new, improved algorithms” to digitally process

captured image data with “higher quality pictures or special features.” EX1004, 7:51-67; EX1003, ¶117.

3. [1A-2]: “perform a plurality of image correction algorithms,”

Sarbadhikari teaches a “method for software updates of the camera algorithms for higher performance, and for adding new features to a camera.” EX1004, 2:36-38; EX1003, ¶120. According to Sarbadhikari, there are various “typical algorithms” including “color filter array interpolation,” “noise reduction,” “edge sharpening,” “color reproduction,” and “dynamic range optimization.” EX1004, 4:63-5:1; EX1003, ¶120.

Sarbadhikari teaches “correction algorithms,” “future improved versions of these algorithms” (EX1004, 8:32-37; EX1003, ¶120), “different algorithms” (EX1004, 9:23-28; EX1003, ¶120) and “image processing algorithms.” EX1004, 8:19-23, Fig. 5; EX1003, ¶120. Sarbadhikari’s programmable processor 20 uses these algorithms to provide “higher quality pictures or specific features.” EX1004, 7:51-8:3; EX1003, ¶120.

A POSA would have understood that Sarbadhikari’s algorithms are image correction algorithms recited in [1A-2] and that Sarbadhikari’s in-camera hardware such as programmable processor 20 use these algorithms to perform image corrections for captured images. EX1003, ¶121.

4. [1A-3]: “process image correction data stored in a database system,”

Sarbadhikari teaches that its enhancement files include look-up tables, matrices, dynamic range optimization tables, and more used to process the captured images such that a desired alteration of the original scene with special effect may be obtained. EX1004, 4:57-5:1, 5:5-10; EX1003, ¶123. Sarbadhikari further discloses parameters in the enhancement files used for enhancing skin tones, sharpness, and color aliasing. EX1004, 8:61-9:1; EX1003, ¶124.

A POSA would have understood that Sarbadhikari’s processor 20 (i.e., in-camera hardware) processes information stored in these look-up tables, matrices, dynamic range optimization tables, etc. as the “image correction data” recited in [1A-3] (EX1003, ¶125), and these tables, matrices, and parameters stored in memory card 24 and the RAM instruction memory 31 are the database system recited in claim [1A-3]. *See* EX1016, 2:8-12; EX1060, 1:36-39; EX1018, [0082]-[0086], [0096], [0108], Fig.5; EX1003, ¶126.

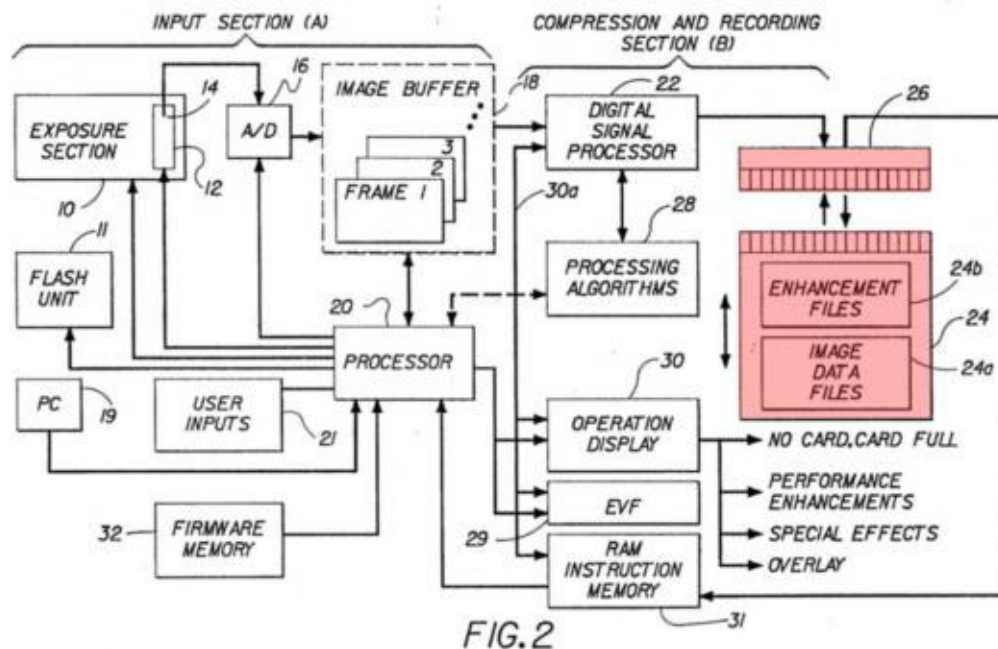
5. [1A-4]: “receive updated software and image correction data, and,”

Receive Updated Software

Sarbadhikari teaches it was well-known that computer programs are updated so “software can be refined to provide higher performance (i.e., better image quality) or more features while using the same hardware.” EX1004, 2:28-38; EX1003, ¶129.

Sarbadhikari also teaches that an electronic camera equipped with a programmable digital processor similarly allows for the camera to receive software updates to achieve higher performance with new features. EX1004, 2:28-38; EX1003, ¶130.

In doing so, Sarbadhikari teaches and illustrates in Figure 1 removable memory card 24 that “is capable of two-way communication with the camera.” EX1004, 4:47-49, Fig. 2; EX1003, ¶131.



EX1004, Fig. 2

Sarbadhikari characterizes memory card 24, connected through an interface 26 to the camera (EX1004, 6:37-40; EX1003, ¶131), as a “software-enhanced device” and files (i.e., software) stored in memory card 24 as “enhancement data files.” EX1004, 4:49-56; EX1003, ¶132. These enhancement files (24b) are used to modify images captured by the camera. EX1004, 6:53-66; EX1003, ¶133.

Sarbadhikari further discloses that its camera downloads enhancement files from memory card 24 to the camera's internal memory (i.e., RAM instruction memory 31) and programmable processor 20 uses these enhancement files to "execute new, improved algorithms which provide higher quality pictures or special features." EX1004, 7:51-67, 9:2-29, Fig. 3; *see also id.*, 3:9-20 ("[a] camera according to this invention" "transfer[s] software previously recorded on the memory card (such as improved camera firmware to process the image)" to the camera), 4:37-5:1 (enhancement files include "code" "capable of upstream modification of image data"), 5:35-40 ("another function of the invention is to store replacement, or updated, software files in the digital storage device so that software updates can be added to the camera"); EX1003, ¶134.

A POSA would have understood that Sarbadhikari's camera receives software updates recited in [1A-4]. EX1003, ¶135.

Receive Updated Image Correction Data

Sarbadhikari's "enhancement files" include updated image correction data. Sarbadhikari teaches the storage device includes "data" "capable of upstream modification of image data and camera performance." EX1004, 4:37-47; EX1003, ¶138. The data includes information stored in look-up tables (e.g., dynamic range optimization tables), matrices, and non-image data, such as parameters for enhancing skin tones, edge sharpening, and a color filter array algorithm to minimize

color aliasing; these files are “capable of affecting the captured image data.” EX1004, 4:60-61, 8:61-9:1; EX1003, ¶138. Sarbadhikari explains that this data “thus” updates “typical algorithms” stored on the camera, including various image correction algorithms for noise reduction, edge sharpening, dynamic range optimization, etc. EX1004, 4:57-5:10; EX1003, ¶138.

A POSA would have understood that the parameters and information stored in various tables enhancing those typical algorithms that processor 20 downloads from memory card 24 are the “updated image correction data” recited in [1A-4]. EX1003, ¶139. Sarbadhikari teaches that the enhancement files provide “improved algorithms” to obtain “higher quality pictures or special features.” EX1004, 7:65-67; EX1003, ¶139.

It was well-known to update software and image correction data for correcting images captured by an electronic camera. EX1005, [0001], [0019], [0020], [0021]; EX1015, 54:52-65; EX1016, 1:29-37, 2:24-38; EX1006, [0012], [0013], [0015], [0027], [0051], [0082]; EX1017, [0003], [0019], [0025], [0028], [0032] Figs. 2 and 3; EX1003, ¶140.

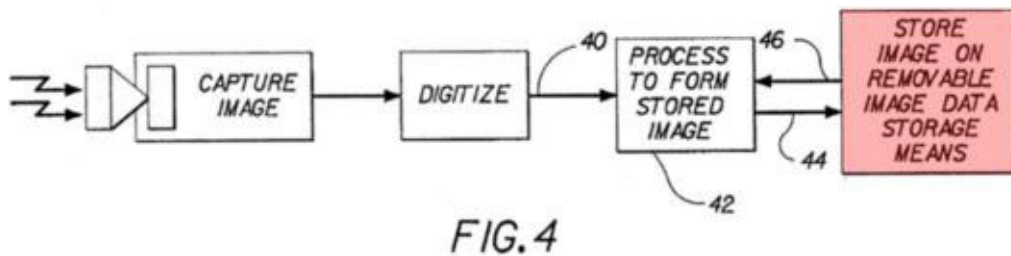
6. [1A-5]: “upgrade the digital camera with the updated software and image correction data;”

Sarbadhikari teaches or at least renders [1A-5] obvious for the reasons discussed in §V(B)(5)(a)-(b) for [1A-4].

Sarbadhikari's camera receives and uses the enhancement files including updated software and image correction data to enhance or upgrade performance of the camera. EX1003, ¶147. A POSA would have thus understood that Sarbadhikari upgrades its camera with updated software and image correction data. EX1004, 2:28-33; EX1003, ¶¶147, 148.

7. [1B]: “storing in memory one or more corrected images resulting from digitally processing the at least one captured image; and”

Sarbadhikari explains and illustrates processing steps for processing image corrections for captured images and storing corrected images in “storage means.” EX1004, Figure 4; EX1003, ¶151.



EX1004, Fig. 4

Sarbadhikari teaches that enhancement files, including processing algorithm(s), are downloaded and applied to a digitized image and the resulting images are stored in removable memory card 24. EX1004, 9:2-22, Fig. 3; EX1003, ¶¶152, 153. Sarbadhikari also teaches that the digital signal processor 22 “applies a compression algorithm from the memory 28 to the digital image signals, and sends

the compressed signals to a removable storage device via an interface 26.” EX1004, 6:27-40, Fig. 2; EX1003, ¶152.

8. [1C]: “wirelessly transmitting at least one of the one or more corrected images,”

Katagiri teaches a surveillance camera that performs image corrections (*e.g.*, white balance, black level, gamma and distortion corrections) (EX1006, [0049], [0053], EX1003, ¶159), and transmits corrected images to an external device via wireless LAN. EX1006, [0020]-[0025], [0082]-[0083], [0087]-[0088], Fig. 1; EX1003, ¶¶159, 161. Thus, Katagiri teaches “wirelessly transmitting at least one of the one or more corrected images.” EX1003, ¶161. Of note, a “wireless LAN” is an example given in the ’266 patent of means for wirelessly transmitting images. EX1001, 28:61-66; EX1003, ¶156.

A POSA would have been motivated to modify Sarbadhikari in light of Katagiri with reasonable expectation of success to include Katagiri’s wireless LAN in Sarbadhikari’s camera to transfer Sarbadhikari’s corrected images in an easier and faster manner by wirelessly transmitting corrected images from a camera to an external device. *Supra* §V(A); EX1003, ¶162.

9. [1D]; “wherein the in-camera software and database system are upgradable to provide improved algorithms and correction data for correction of images.”

Sarbadhikari teaches or at least renders [1D] obvious as discussed in [1A-2]-[1A-5].

Sarbadhikari teaches software updates for higher performance and adding new features to a camera (the claimed “upgradable” in-camera software), and these algorithms include “improved versions” (the claimed “improved algorithms”) and are used for image corrections. EX1003, ¶164.

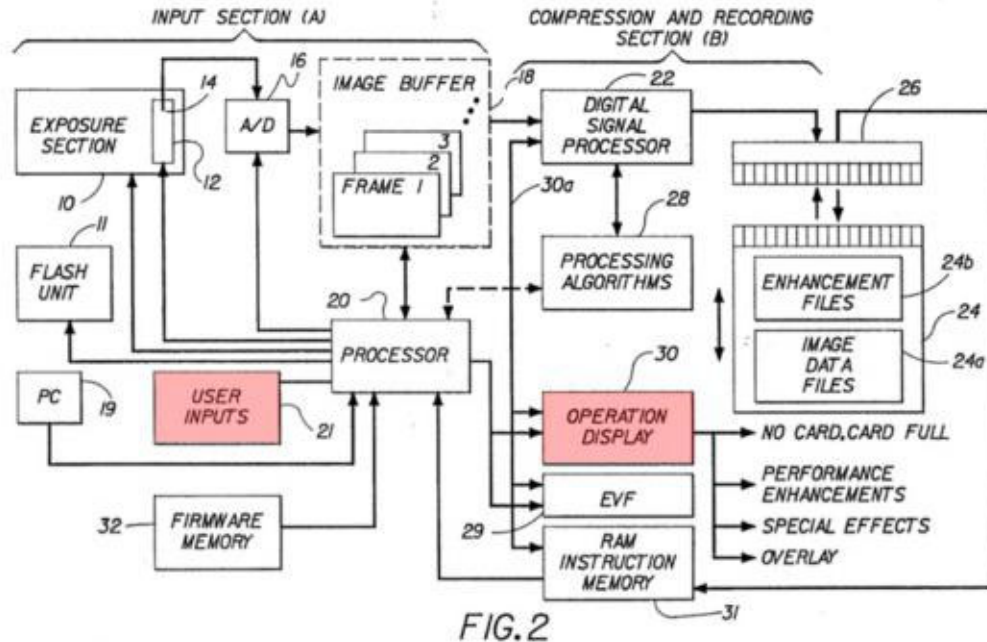
Sarbadhikari’s camera receives look-up tables, matrices, and parameters that are stored in instruction memory 31 (the claimed “upgradable” database system), and Sarbadhikari explains that information stored in these look-up tables, matrices and parameters are updated image correction data (the claimed “improved... correction data”). EX1003, ¶164.

Sarbadhikari discloses the claimed “upgrade the digital camera with the updated software and image correction data.” EX1003, ¶¶164, 165.

C. Claim 2

[2]: “The method of claim 1, wherein the digitally processing at least one captured image further comprises: electronically reading stored user-adjustable variables; and processing image corrections using the user-adjustable variables.”

Sarbadhikari’s RAM instruction memory 31 stores a plurality of algorithms, look-up tables, matrices, and parameters (i.e., enhancement files 24b) for modifying or enhancing captured images. *Supra* §V(B)(3)(4); EX1003, ¶167. Sarbadhikari discloses an operation display (30) and a user input (21). EX1004, Fig. 2; EX1003, ¶¶167, 168.



EX1004, Fig. 2

Sarbadhikari's operation display panel (30) displays enhancement files so that a user can use the user inputs (21) to select preferred algorithms to process image corrections depending on the picture taking situation. EX1004, 7:15-22, 7:31-50, Fig. 3; EX1003, ¶168.

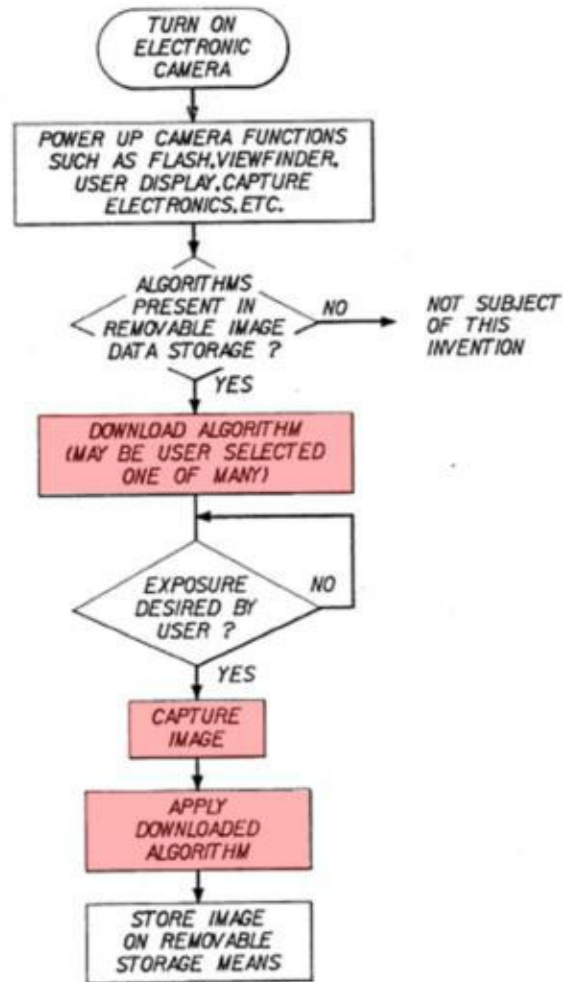


FIG. 3

EX1004, Fig. 3

As shown in Figure 3, Sarbadhikari allows a user to select and download one or more algorithms and perform “APPLY DOWNLOADED ALGORITHM” to process image corrections following “CAPTURE IMAGE.” EX1004, Fig.3; EX1003, ¶169.

A POSA would have understood that Sarbadhikari’s enhancements (claimed “user-adjustable variables”) vary depending on the specific image processing algorithm(s) that a user selects to use for correcting captured images, and these

enhancements (e.g., enhancement files including the algorithms) are electronically read from memory card 24 by processor 20. EX1003, ¶170.

D. Claim 9

[9]: “The method of claim 2, wherein the user-adjustable variables include filter settings.”

According to the '266 patent, digital filters such as anti-aliasing and fast Fourier transform (“FFT”), which the '266 patent characterizes as an “algorithm,” correct optical and digital aberrations. EX1001, 9:56, 31:46-56; EX1003, ¶175.

Sarbadhikari teaches user-adjustable enhancements depending on specific algorithm(s) that a user selects to use for correcting captured images (*Supra* §V(C)), and these enhancements include a plurality of image processing algorithms (e.g., filter array interpolation, noise reduction, edge sharpening, color reproduction, dynamic range optimization algorithms) and various look-up tables, matrices, parameters used to modify or enhance the effect of captured images (*e.g.*, skin tones, edge sharpening, color aliasing). *Supra* §V(B)(3) and (C); EX1003, ¶176.

A POSA would have understood that Sarbadhikari’s algorithms are filter settings because it was well-known that these algorithms are used to enhance sharpness, minimize aliasing, reduce noise, etc. for captured images. EX1061, 2:31-40, 7:54-61; EX1026, [0006], [0038], [0059], [0061], [0066], [0074]-[0092], Figs. 2 and 7; EX1027, [0030], [0032]; EX1003, ¶¶177, 178.

E. Claim 10

[10]: “The method of claim 2, wherein the user-adjustable variables include special effects.”

According to the '266 patent, portraits traditionally use filtration to produce images with special effects including color enhancing and diffusion (e.g., soft effect, mist/fog, black mist). EX1001, 15:20-23, 15:24-28, 15:34-36; EX1003, ¶182.

In addition to algorithms, tables, matrices, and parameters (*supra* §V(B) and (C)), Sarbadhikari teaches that the enhancement files include a “special set-up for portraiture” used to process captured images to obtain, for example, portraits with “special effects of the kind which change the image into some desired alteration of the original scene” such as enhanced skin tone, edge sharpening, and color aliasing. EX1004, 5:5-10, 7:40-43, 8:61-9:1, Fig. 2; EX1003, ¶183. A user selects on operation display (30) which algorithm(s) and/or specific effect(s) from the enhancement files to apply to the captured images. *Supra* §V(C).

A POSA would have understood that Sarbadhikari’s enhancements vary depending on which special effect(s) a user selects to use for correcting captured images and these special effects are downloaded from memory card 24 and stored in RAM instruction memory 31. EX1003, ¶184.

It was well-known to use user-adjustable special effects to perform image corrections for captured images. EX1026, [0006], [0038], [0059], [0061], [0066],

[0074]-[0092], Figs. 2 and 7; EX1027, [0030], [0032], EX1017, [0033], [0071]; EX1003, ¶185.

F. Claim 20

[20]: “The method of claim 1, wherein the wirelessly transmitting images includes automatically transmitting the at least one of the one or more corrected images.”

The combination of Sarbadhikari and Katagiri renders obvious claim 1, including wirelessly transmitting corrected images. *Supra* §V(A) and V(B)(8); EX1003, ¶189.

Katagiri further teaches automatic transmission of corrected images. EX1006, [0021] (“when the surveillance target area is imaged by the surveillance camera 2, data from the image is transmitted from the surveillance camera 2 to the controller”); EX1003, ¶190. A POSA would have understood that a surveillance camera taught in Katagiri, which is essentially required to transmit images in real time, would automatically transmit images to an external device upon capture. EX1003, ¶190.

To the extent Katagiri does not expressly teach automatic transmission of corrected images, a POSA would have been motivated to modify the camera of Sarbadhikari and Katagiri such that Katagiri’s wireless communication network transfers Sarbadhikari’s corrected images automatically to an external device, because wireless image transmission can be carried out without user’s command,

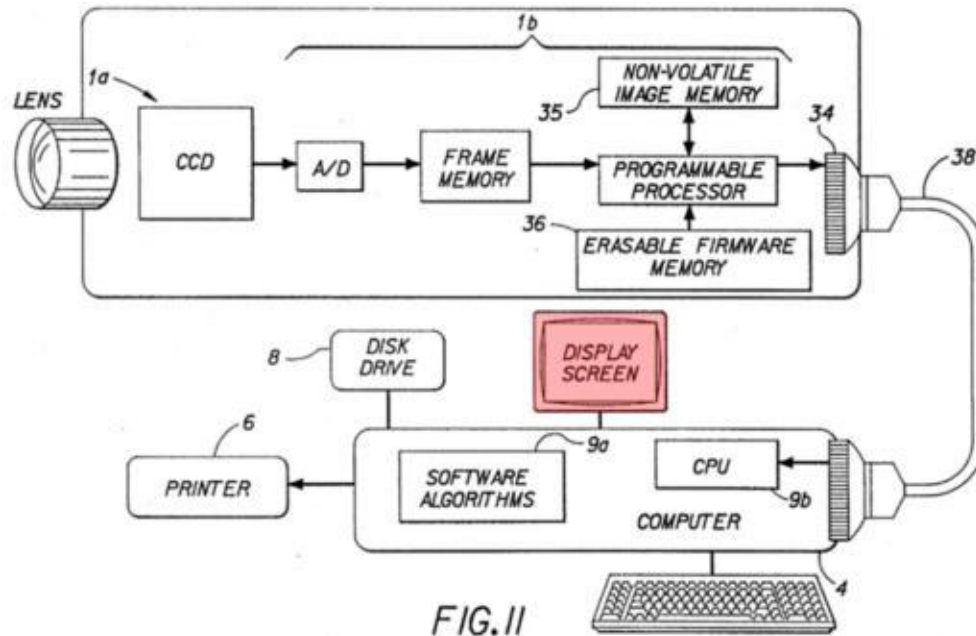
and therefore the image transmission can be implemented in a faster and easier manner. EX1003, ¶192.

And it was also well-known that automatic image transmission from a camera to an external device makes it easier and faster than requiring a user to manually transmit an image. EX1031, Abstract, [0005], [0008], [0014]-[0018], [0025], [0029]; EX1032, Abstract, [0005]-[0006], [0011], [0013], [0244], [0259], [0306]; EX1033, [0004], [0023], [0037], [0063], [0064], [0070], [0072]; EX1034, [0004], [0006], [0038], [0064], [0065], [0071], [0073]; EX1003, ¶191. Because automatic transfer of images was well-understood, as shown above, a POSA would have reasonably expected success in making this modification. EX1003, ¶193.

G. Claim 22

1. [22PRE]: “A method of displaying one or more images captured by a digital camera on an external monitor, comprising:”

Sarbadhikari teaches that “[a]n electronic imaging system ...wherein said player device comprises a computer that can be optionally attached to a display screen or a printer for display or printing of the captured images, respectively.” EX1004, 12:55-58, Fig. 11; EX1003, ¶197.



EX1004, Fig. 11

A POSA would have understood that Sarbadhikari's display screen is an external monitor that displays one or more captured images by Sarbadhikari's camera. EX1003, ¶198.

2. [22A-1]: “digitally processing at least one captured image to produce one or more corrected image, the processing using in-camera hardware and software that is configured to:”

Sarbadhikari teaches or at least renders [22A-1] obvious for the reasons given regarding [1A-1] and [1B]. *Supra* §V(B)(2) and (7); EX1003, ¶200.

3. [22A-2]: “perform a plurality of image correction algorithms,”

Sarbadhikari teaches or at least renders [22A-2] obvious for the reasons given regarding [1A-2]. *Supra* §V(B)(3); EX1003, ¶201.

4. [22A-3]: “process image correction data stored in a database system,”

Sarbadhikari teaches or at least renders [22A-3] obvious for the reasons given regarding [1A-3]. *Supra* §V(B)(4); EX1003, ¶202.

5. [22A-4]: “store updated software or image correction data or both, and,”

Sarbadhikari teaches or at least renders [22A-4] obvious for the reasons given regarding [1A-4]. *Supra* §V(B)(5); EX1003, ¶203.

6. [22A-5]: “upgrade the digital camera with the updated software or image correction data or both; and”

Sarbadhikari teaches or at least renders [22A-5] obvious for the reasons given regarding [1A-5]. *Supra* §V(B)(6); EX1003, ¶204.

7. [22B]: “wirelessly transmitting at least one of the one or more corrected images in a format that the external monitor can receive,”

Limitation [22B] recites limitation [1C] (which is obvious over Sarbadhikari and Katagiri for the reasons given in §V(B)(8)) and adds “in a format that the external monitor can receive[.]” EX1003, ¶206.

Sarbadhikari teaches a well-known JPEG format for compressing images, and processor 22 sends the compressed image data to memory card 24 through interface 26 for transferring to and displaying images on an external device such as a display screen. EX1004, 6:33-40, 8:23-26, 12:14-58, Fig. 2; EX1003, ¶207.

A POSA would have understood that the “JPEG” format was standard, widely used, and that monitors would be able to receive and display files in that format within a POSA’s skill level. EX1035, [0001]; EX1036, Abstract, [1005]-[1006], [0033]; EX1003, ¶208.

8. [22C]: “wherein the in-camera software and database system are upgradable to provide improved algorithms and correction data for correction of images.”

Sarbadhikari teaches or at least renders [22C] obvious in light of Katagiri for the reasons given regarding [1D]. *Supra* §V(B)(9); EX1003, ¶210.

H. Claim 23

[23]: “The method of claim 22, wherein the digitally processing at least one captured image further comprises: electronically reading stored user-adjustable variables; and processing image corrections using the user-adjustable variables.”

Claim 23 is obvious over Sarbadhikari and Katagiri for the reasons given regarding claims 2 and 22. *Supra* §V(C) and (G); EX1003, ¶212.

VII. Ground 2: Claims 2-10, 13-19, 24, 27 And 30 Are Obvious Over Sarbadhikari, Katagiri And Iwasawa

A. Motivation to Combine

Like Sarbadhikari and Katagiri (*supra* §V(A)), Iwasawa is analogous art to the ’266 patent as it teaches an electronic camera performing shading corrections for captured images based on shading correction data in a rewritable memory corresponding to parameters such as aperture settings, zoom position and lens type. EX1005, [0001], [0019]-[0021], [0027], Fig. 2; EX1003, ¶215. This is the same

problem that the '266 patent sought to solve. EX1001, 10:41-11:30; 8:14-19; EX1003, ¶215. Moreover, Sarbadhikari, Katagiri, Iwasawa and the '266 patent list the H04N subclass under the International Classification. EX1003, ¶215.

A POSA would have understood the benefit to the camera of Sarbadhikari and Katagiri to include Iwasawa's shading correction capability. Sarbadhikari teaches user-adjustable exposure settings including aperture and shutter speed settings for image capturing. EX1004, 5:11-14, 6:13-18, 6:53-59, 7:15-50, Fig. 3; EX1003, ¶216. Iwasawa teaches a "shading" problem that varies due to the change of aperture value, zoom position, and lens type. EX1005, [0004], [0005]; EX1003, ¶216. A POSA would have understood that Sarbadhikari's camera would have had the same "shading" problem arising from the change of variable(s) such as lens type and/or exposure settings. EX1003, ¶216. Iwasawa would have motivated a POSA to add Iwasawa's shading correction capability to Sarbadhikari's camera to solve the shading problem caused by Sarbadhikari's camera to improve image quality. EX1003, ¶¶216, 217.

It was well-known that a camera or an imaging device performs both Iwasawa's shading correction and other types of correction such as white balance, color (chromatic) and sharpness corrections as described in Sarbadhikari and Katagiri, respectively. EX1019, 7:55-8:22, 5:56-64, 3:32-38; EX1018, Abstract, [0086]; EX1065, 12:10-18, 1:37-48; EX1015, 24:10-14, 60:19-23, 63:39-57, 70:29,

24:54-60; 63:54-56; 9:28-30, 49:30-40; EX1059, [0012], [0036], [0053], [0054]; EX1017, [0061]-[0070], [0071]; EX1003, ¶218.

A POSA would have had a reasonable expectation of success in modifying the camera of Sarbadhikari and Katagiri to include Iwasawa's shading correction capability because a POSA would have simply used Sarbadhikari's processor (20) to execute Iwasawa's shading correction process and Sarbadhikari's RAM instruction memory (31) and/or memory card (24) to store and update Iwasawa's shading correction data corresponding to aperture value, zoom position or lens type. EX1003, ¶219.

B. Claim 2

[2]: “The method of claim 1, wherein the digitally processing at least one captured image further comprises: electronically reading stored user-adjustable variables; and processing image corrections using the user-adjustable variables.”

Iwasawa teaches a digital camera performing shading correction, which is a digital operation, after an image signal is captured by an optical lens and converted into a digital signal by a signal conversion means. EX1005, [0001], [0007], [0008]; EX1003, ¶221. Iwasawa further teaches that its lens 201 outputs control signals of aperture value, zoom position and lens type, which are adjustable. EX1005, [0008], [0027]; EX1003, ¶222. To the extent Iwasawa does not expressly teach these parameters or variables are user adjustable, Sarbadhikari teaches various control capture parameters (*i.e.*, variables) such as aperture setting that are user-adjustable.

EX1004, 5:11-15, 4:37-47; 7:44-50 (teaching user-adjustable exposure time and aperture); *see also* EX1017, [0025], [0033] (teaches a camera that can use user-adjustable focal length, aperture value as image capture metadata to find or match, or generate appropriate correction parameters stored in the correction database to correct images); EX1003, ¶223.

Iwasawa further teaches that its camera detects a control signal, reads out shading correction data corresponding to the detected aperture value, zoom position and lens type from RAM 208 to perform shading corrections. EX1005, [0019]-[0021], Fig. 2; EX1003, ¶224. A POSA would have understood that Iwasawa's shading correction is a digital process that electronically reads shading correction data corresponding to the pre-stored user-adjustable variables such as aperture value, zoom position and lens type to process image corrections for captured images. EX1003, ¶225.

A POSA would have been motivated with reasonable expectation of success to modify the camera of Sarbadhikari and Katagiri by simply adding (1) Iwasawa's multiplier 209 to a position between Sarbadhikari's A/D 16 and processor 22, or alternatively adding the shading correction functionality to Sarbadhikari's processor 22 directly, and (2) Iwasawa's shading correction data to Sarbadhikari's RAM instruction memory 31 and/or memory card 24, with conventional skills. *Supra* §VI(A); EX1003, ¶226.

C. Claim 3

[3]: “The method of claim 2, wherein the user-adjustable variables include an aperture setting.”

Claim 3 is obvious over Sarbadhikari, Katagiri and Iwasawa for the reasons given regarding claim 2. *Supra* §VI(B); EX1003, ¶229.

D. Claim 4

[4]: “The method of claim 2, wherein the user-adjustable variables include lens data.”

Iwasawa teaches a camera performing shading correction based on shading correction data stored in RAM 208 corresponding to user-adjustable aperture, zoom position, and lens type of the optical lens. *Supra* §VI(B). A POSA would have understood that Iwasawa’s lens type is “lens data” as recited in claim 4; aperture value and zoom position are also “lens data.” EX1003, ¶233. In addition, Iwasawa’s zoom position of lens teaches or suggests a zoom lens with user-adjustable lens focal length corresponding to each zoom position, which also satisfies the claimed “lens data.” EX1055, 4:55-65, Table 1C (teaching that each zoom position of a zoom lens 10 has a corresponding EFL (*i.e.*, effective focal length), which indicates a focal length); EX1003, ¶234.

A POSA would have been motivated to modify the camera of Sarbadhikari and Katagiri in light of Iwasawa and such modification would have been made with reasonable expectation of success. *Supra* §VI(A)(B); EX1003, ¶¶236, 237. Indeed, it was well-known to use image correction data corresponding to user-adjustable lens

data such as lens type and lens focal length to process image corrections for captured images. EX1018, [0058], [0060], [0084], [0177]; EX1019, 2:59-60, 3:5-10, 4:16-20, 4:29-33, 6:23-30, 6:47-52, 8:27-41; EX1017, [0025], [0033]; EX1020, 3:65-4:4, 5:10-24, 7:56-64, 11:34-46; EX1003, ¶235.

E. Claim 5

[5]: “The method of claim 2, wherein the user-adjustable variables include shutter speed settings.”

Sarbadhikari teaches user-adjustable exposure settings including shutter speed settings. EX1004, 5:11-14, 6:13-18, 6:53-59, 7:15-50, Fig. 3; EX1003, ¶241. Iwasawa teaches shading correction data corresponding to aperture value, zoom position and lens type. *Supra* §VI(B). Thus, the combination of Sarbadhikari and Iwasawa teaches the shading correction data correspond to the shutter speed setting, and therefore teaches the additional limitation recited in claim 5. EX1003, ¶242.

Indeed, it was well-known that both shutter speed and aperture value are exposure settings for image capturing. *See* EX1053, [0062]; EX1022, [0021]. And it was also known in the art that a camera processes image corrections based on user-adjustable shutter speed settings. EX1018, [0101], [0109], [0110], [0158]; EX1062, [0028], [0049], [0087], [0091], [0092], [0137] Figs. 4 and 6; EX1064, [0032], [0051], [0088]-[0090], Figs. 3 and 5; EX1003, ¶243.

A POSA would have been motivated to modify the camera of Sarbadhikari and Katagiri in light of Iwasawa with reasonable expectation of success to simply

include Iwasawa's shading correction data to correspond to Sarbadhikari's user-adjustable shutter speed settings. *Supra* §VI(A); EX1003, ¶¶244, 245.

F. Claim 6

[6]: “The method of claim 2, wherein the user-adjustable variables include ISO settings.”

Sarbadhikari teaches that its enhancement files in the memory card 24 include user-adjustable ISO settings. EX1004, 5:11-14, 6:13-18, 7:15-50, 9:64-10:4, 9:58-60, 10:14-18, Figs. 3 and 7; EX1003, ¶¶249, 250. And Iwasawa teaches shading correction data corresponding to user-adjustable aperture (*supra* §VI(B)), which was well known as a parameter that may affect or be affected by ISO settings. EX1022, [0021], [0023]; EX1003, ¶¶248, 251. Accordingly, the combination of Sarbadhikari's user-adjustable ISO settings and Iwasawa's shading correction data discloses the shading correction data that corresponds to the ISO settings. Thus, the combination of Sarbadhikari and Iwasawa discloses the additional limitation of claim 6. EX1003, ¶252.

A POSA would have been motivated to modify the camera of Sarbadhikari and Katagiri in light of Iwasawa with reasonable expectation of success to simply include Iwasawa's shading correction data to correspond to Sarbadhikari's user-adjustable ISO settings. *Supra* §VI(A); EX1003, ¶¶253, 254. It was also well-known to use ISO settings to perform image corrections (including shading correction) for

captured images. EX1062, [0027], [0028], [0030], [0049]; EX1063, [0040], [0062], [0169]-[0178]; EX1064, [0032], [0051]; EX1003, ¶251.

G. Claim 7

[7]: “The method of claim 2, wherein the user-adjustable variables include subject type.”

Sarbadhikari teaches enhancements that may vary depending on specific image processing algorithm(s) that a user uses to modify or enhance captured images. *Supra* V(C). And these algorithms might be used for “particular applications” such as “action photography, portraiture, or infant photography,” which a POSA would have understood as specific subject types (EX1003, ¶257), to modify captured images. EX1004, 8:50-9:1; EX1003, ¶258.

To the extent Sarbadhikari does not expressly teach the claimed “subject type,” Iwasawa expressly teaches a program calculating shading correction data corresponding to the “scene of the subject,” which a POSA would have understood to be the claimed “subject type.” EX1005, [0021], EX1003, ¶259.

Accordingly, the combination of Sarbadhikari’s user-adjustable subject type and Iwasawa’s shading correction data discloses the shading correction data that corresponds to the subject types. Thus, the combination of Sarbadhikari and Iwasawa discloses the additional limitation of claim 7. EX1003, ¶259.

A POSA would have been motivated to combine Sarbadhikari with Katagiri and Iwasawa and such combination would have been made with reasonable expectation of success. *Supra* §VI(A); EX1003, ¶¶261, 262.

It was well-known that a camera user selects the scene classification corresponding to the subject type of the scene to correct captured images. *See* EX1061, 2:67-3:13, 5:66-6:8, Fig. 3; EX1003, ¶260.

H. Claim 8

[8]: “The method of claim 2, wherein the user-adjustable variables include tonal range corrections.”

According to the '266 patent, “in-camera tonal range corrections” can be made by manipulating the aperture and shutter speed (EX1001, 14:57-60) or in association with specific scenes or image type stored in the database. EX1001, 14:60-67, 15:12–17; EX1003, ¶¶265, 266.

Claim 8 is obvious over Sarbadhikari, Katagiri and Iwasawa for the reasons given regarding claims 3, 5 and 7. *Supra* §VI(C)(E)(G); EX1003, ¶¶267, 268.

I. Claim 9

[9]: “The method of claim 2, wherein the user-adjustable variables include filter settings.”

Sarbadhikari teaches the “user-adjustable variables include filter settings” recited in claim 9. *Supra* §V(D); EX1003, ¶270.

A POSA would have been motivated to modify the camera of Sarbadhikari and Katagiri in light of Iwasawa's camera and such modification would have been successful with reasonable expectation. *Supra* §VI(A)(B); EX1003, ¶271.

J. Claim 10

[10]: “The method of claim 2, wherein the user-adjustable variables include special effects.”

Sarbadhikari teaches the “user-adjustable variables include special effects” recited in claim 10. *Supra* §V(E); EX1003, ¶273.

A POSA would have been motivated to modify the camera of Sarbadhikari and Katagiri in light of Iwasawa's camera and such modification would have been successful with reasonable expectation. *Supra* §VI(A) and (B); EX1003, ¶274.

K. Claim 13

[13]: “The method of claim 1, wherein the in-camera software processes image corrections based on one or more prior image corrections.”

A POSA would have understood that the “corrections” recited in claim 13 could mean correction data stored in the database. EX1001, 11:28-30, 22:35-39, 35:48-50; EX1003, ¶276.

Sarbadhikari teaches using in-camera software to process image corrections. *Supra* §V(B); EX1003, ¶277. Iwasawa teaches storing the shading correction data corresponding to one or more conditions of aperture value, zoom position, and lens type of the optical lens in the RAM 208.” EX1005, [0020]; EX1003, ¶277. Iwasawa further teaches CPU (206) executing a program to calculate correction data

corresponding to aperture, zoom position, and lens type (*i.e.*, user-adjustable variables), and storing (writing) the calculated correction data corresponding to the user-adjustable variables in RAM 208. EX1005, [0019], [0020], Fig. 2; EX1003, ¶277. Iwasawa explains that “the present invention can perform shading correction by selecting the type of shading correction data based on the control signal of the aperture value, the zoom position, and the lens type output from the optical lens 101, detecting the position of the screen using the address synchronized to the CCD drive pulse, and operating with the imaging signal using the multiplier 111, thereby making it possible to perform shading correction quickly, stably, and accurately without variation in the elements or change over time.” EX1005, [0018]; EX1003, ¶277.

A POSA would have understood that Iwasawa’s calculated shading correction data stored in RAM 208 is read out again by the CPU to perform shading corrections for a captured image taken under the same optical parameters (e.g., aperture, zoom position). EX1003, ¶278. In other words, Iwasawa performs shading corrections (the claimed “image corrections”) based on previously calculated shading correction data stored in the RAM (the claimed “on one or more prior image corrections”). *Id.* This makes sense as Iwasawa explains that such configuration performs “quick and accurate” shading correction. *Id.*

And it was well-known that a digital camera calculates and stores image correction data for correcting a captured image and use the calculated and stored image correction data to process image correction for another captured image subsequently taken under the same capturing or optical conditions as the prior image. EX1017, [0021], [0025], [0028]; EX1003, ¶278.

A POSA would have been motivated to combine Sarbadhikari with Katagiri and Iwasawa and such combination would have been made with reasonable expectation of success. *Supra* §VI(A); EX1003, ¶¶279, 280.

L. Claim 14

[14]: “The method of claim 1, further comprising changing a variable based on an auto-focus process performed by the camera and electronically storing that changed variable.”

The '266 patent admits that “auto-focus (AF) technology” was so ubiquitous that “[n]early all consumer and professional cameras became automated to some degree by the mid-1990s.” EX1001, 1:60-2:26; EX1003, ¶283.

A POSA would have understood and found it obvious, given the ubiquity of AF technology as admitted by the '266 patent, that the implementation of Sarbadhikari, Katagiri, and Iwasawa in a digital camera would have included an auto-focus process to automatically adjust, vary, or change focus or focal point, which the '266 patent characterizes as a variable. EX1001, 1:60-67; 2:15-26; EX1003, ¶283; *see also* EX1074, 1:8-2:21 (teaching an auto-focus process

performed by a camera to better adjust focus on fast-moving object on which the manual focus adjustment is “often beyond human ability”); EX1075, 1:23-55, 5:54–6:30, Fig. 2 (teaching an autofocus camera with a lens focus motor and a controller performing autofocus within the camera to help a user adjust focus faster and easier); EX1003, ¶286.

With respect to the “electronically storing that changed variable” recited in claim 14, Iwasawa teaches that “[t]he shading correction...stores the shading correction data corresponding to one or more conditions of the aperture value, the zoom position, and the lens type of the optical lenses in the RAM 208[.]” EX1005, [0020], EX1003, ¶284. A POSA would have understood that Iwasawa teaches electronically storing changeable or variable optical parameters (e.g., aperture, zoom position, lens type) associated with the shading correction data. EX1003, ¶285.

A POSA especially would have been motivated to include auto-focus because Sarbadhikari teaches “action photography” (EX1004, 8:58-60), which was known to a POSA as photography of a fast-moving object. EX1003, ¶287. A POSA further would have been motivated to calculate shading correction data corresponding to the automatically changed focus or focal point and store the changed focus or focal point associated with the shading correction data in the RAM (EX1003, ¶287), as it was also well-known to perform image corrections for captured images based on correction data corresponding to focus or focal point automatically adjusted, varied,

or changed by the well-known in-camera auto focus process. EX1018, [0058], [0060], [0084], [0089], [0090], [0101], [0109], [0110], [0158], [0177], Fig. 8; EX1020, 1:7-10, 2:26-31; 3:48-64, 4:65-5:2, 7:56-64, 3:65-4:4, 5:10-24, 7:56-64, 11:34-46; EX1021, [0035], [0047], [0070], [0085], [0087], [0090], [0092]; EX1003, ¶286.

Such modification would have been successful with reasonable expectation because a POSA would have simply added a controller and a motor, which was well-known, to the camera of Sarbadhikari, Katagiri and Iwasawa to automatically change focusing point of the camera and used a memory to store the changed focal point associated with the shading correction data. *Supra* §VI(A); EX1003, ¶288.

M. Claim 15

[15]: “The method of claim 1, further comprising changing a variable based on an auto-exposure process performed by the camera and electronically storing that changed variable.”

The '266 patent recognizes that auto-exposure was well-known to automatically adjust exposure (*e.g.*, shutter speed and aperture) settings, which the '266 characterizes as variables. And as explained above, the '266 patent recognizes that auto-exposure (AE) was present in “[n]early all consumer and professional cameras” long before the alleged invention. EX1001, 2:3-12, 2:15-21, 24:4-9; EX1003, ¶292; *see also* EX1029, Abstract, 3:42-47; EX1024, Abstract; EX1054, 1:13-21; EX1022, [0021], [0022]; EX1003, ¶293. And it was well-known that auto-

exposure helps users adjust exposure parameters faster and easier than manual exposure adjustment. EX1076, [0009] (teaching a digital camera with an auto exposure process that “is a feature desired by many camera users, particularly those that are not photography experts, as automatic exposure control enables users to take photographs without having to manually adjust the lens aperture and shutter speed”); EX1003, ¶293.

Sarbadhikari teaches a “programmed control processor 20” that controls exposure. EX1004, 6:13-26; EX1003, ¶294. A POSA would have understood that Sarbadhikari teaches or at least suggests an auto-exposure process because Sarbadhikari’s exposure section 10 is controlled by a “programmed” control processor, and because Sarbadhikari’s “enhancement files” can “control capture parameters such as exposure time.” EX1004, 5:11-15; EX1003, ¶294. And Iwasawa teaches electronically storing changeable or variable optical parameters (*e.g.*, aperture, zoom position, lens type) associated with the shading correction data. *Supra* §VI(L).

Indeed, Sarbadhikari already teaches “[o]ther electronic camera systems” that “record an image header along with the digital image data” and the header, for example, includes information indicating some characteristics about the image or the camera such as “exposure value” and “shutter speed.” EX1004, 1:32-40; EX1003, ¶296. A POSA would thus have understood that Sarbadhikari at least

suggests electronically storing changed exposure value (*i.e.*, variable) associated with the image or the camera. EX1003, ¶296.

Thus, a POSA would have been motivated to modify the camera of Sarbadhikari with Katagiri and Iwasawa with reasonable expectation of success because a POSA would have simply use Sarbadhikari's programmed control processor (20) to automatically control exposure settings and electronically storing that changed exposure settings as variable in Sarbadhikari's memory. *Supra* §VI(A); EX1003, ¶296.

Accordingly, claim 15 is obvious over Sarbadhikari, Katagiri and Iwasawa for the reasons given regarding claims 3, 5 and 14. *Supra* §VI(C)(E) and (L); EX1003, ¶296.

N. Claim 16

[16]: “The method of claim 1, further comprising changing a variable based on a depth of field adjustment process performed by the camera and electronically storing that changed camera variable.”

The '266 patent teaches that depth of field (“DOF”) depends on aperture and shutter speed settings. EX1001, 13:33-46, 14:4-11, EX1003, ¶299. A POSA would have understood that a depth of field adjustment process performed by a camera is a process of adjusting or selecting the combination of aperture and shutter speed settings, of which at least one is a variable based on the depth of field adjustment process recited in claim 16. *See* EX1028, [0003] (“the depth of field can be changed

by variously selecting the combinations of apertures and shutter speeds”). EX1003, ¶300.

It was well-known that a digital camera stores aperture information as a variable in a memory. EX1018, [0100], [0101] (teaching a recording method performed by a digital camera where “f-number at the time of exposure” as “tag information” is stored in a memory), Fig. 8; EX1003, ¶300.

Thus, claim 16 is obvious over Sarbadhikari, Katagiri and Iwasawa for the reasons given regarding claims 3, 5 and 14. *Supra* §VI(C)(E) and (L); EX1003, ¶¶301, 302.

O. Claim 17

[17]: “The method of claim 14, further comprising digitally processing the at least one captured image using the in-camera software to correct at least one optical image aberration associated with an optical system and the changed camera variable.”

According to the ’266 patent, “[s]ince lenses of the same focal length but with different maximum apertures represent completely different lens designs, modifications of their aberrations will vary relative to each specific lens type.” EX1001, 11:19-30, EX1003, ¶304.

Sarbadhikari teaches using in-camera software to process image corrections. *Supra* §V(B). Iwasawa teaches a “shading” problem, which is a type of optical image aberration. EX1005, [0004], [0005]; EX1003, ¶305. Shading characteristics may vary depending on the characteristics of optical parameters settings such as aperture

value and zoom position (the claimed “changed camera variable”) of individual lenses or cameras (the claimed “optical system”). EX1005, [0004], [0005]. *Supra* §VI(B)(C) and (D); EX1003, ¶305.

Thus, claim 17 is obvious over Sarbadhikari, Katagiri and Iwasawa for the reasons given regarding [1A-1] of claim 1, claims 2-4 and claim 14. *Supra* §§V(B)(2), and VI(B)(C)(D) and (L); EX1003, ¶306.

P. Claim 18

[18]: “The method of claim 15, further comprising digitally processing the at least one image using the in-camera software to correct at least one optical image aberration associated with an optical system and the changed camera variable.”

Claim 18 is obvious over Sarbadhikari, Katagiri and Iwasawa for the reasons given regarding claims 15 and 17. *Supra* §VI(M) and (O); EX1003, ¶308.

Q. Claim 19

[19]: “The method of claim 16, further comprising digitally processing the at least one image using the in-camera software to correct at least one optical image aberration and the changed camera variable.”

Claim 19 is obvious over Sarbadhikari, Katagiri and Iwasawa and for the reasons given regarding claims 16-18. *Supra* §VI(N)(O) and (P); EX1003, ¶310.

R. Claim 24

[24]: “The method of claim 22, wherein the user-adjustable variables include aperture settings, lens data, shutter speed settings, and ISO settings.”

Claim 24 is obvious over Sarbadhikari, Katagiri and Iwasawa for the reasons given regarding claims 3-6 and 22. *Supra* §§VI(C)-(F) and V(G); EX1003, ¶312.

S. Claim 27

[27]: “The method of claim 22, wherein the in-camera software processes image corrections based on one or more prior image corrections.”

Claim 27 is obvious over Sarbadhikari, Katagiri and Iwasawa for the reasons given regarding claims 13 and 22. *Supra* §§VI(K) and V(G); EX1003, ¶314.

T. Claim 30

[30]: “The method of claim 1; further comprising: digitally processing a plurality of images to correct video taken by the digital camera; and storing a plurality of corrected images.”

Iwasawa teaches that its shading correction applies to video signal taken by an electronic video camera. EX1005, [0002], [0021]; EX1003, ¶¶317, 318. It was well-known that video data is constructed by a plurality of still images stored in a frame memory on a frame-by-frame basis. EX1008, [0006], [0038], [0039], [0047], [0052], [0058], [0061], [0062], [0071], [0072], Fig. 1; EX1019, 9:65-10:13, 10:29-40; EX1003, ¶318. Indeed, the '266 patent recognizes that video can be viewed as “merely a very rapid (30 to 60 frames per second) application of still photography”); EX1001, 27:25-39, EX1003, ¶318. As discussed, Sarbadhikari teaches “storing in memory one or more corrected images...” recited in limitation [1B]. *Supra* §V(B)(7).

A POSA would have been motivated to modify Sarbadhikari and Katagiri with reasonable expectation of success to add Iwasawa’s shading correction capability that is also applied to captured video images, and those corrected video

images would have been stored on a frame-by-frame basis in a memory (*e.g.*, Sarbadhikari's instruction memory 31). *Supra* §VI(A); EX1003, ¶¶319-321.

VIII. Ground 3: Claims 8, 13 And 27 Are Obvious Over Sarbadhikari, Katagiri And Gindele

A. Motivation to Combine

Sarbadhikari and Katagiri are analogous art to the '266 patent. *Supra* §V(A). Similarly, Gindele teaches a digital camera performing image corrections such as color, brightness and tonal scale enhancements for captured images. *See* EX1056, [0002], [0006], [0044], [0045], [0055], [0056], [0060], [0078], Figs. 1-2, 3a and 4; EX1003, ¶324. This is the same problem that the '266 patent sought to solve. EX1001, 14:49-56, 14:27-48, 14:60-67, 15:12-17; EX1003, ¶324. Thus, Gindele is analogous art to the '266 patent. EX1003, ¶324. Moreover, Sarbadhikari, Katagiri, Gindele and the '266 patent list the H04N subclass under the International Classification. EX1003, ¶328.

Sarbadhikari teaches “dynamic range optimization algorithms” and “dynamic range optimization tables” used to modify or enhance the dynamic range of captured images. EX1004, 4:57-5:1, 6:53-59; EX1003, ¶325. Gindele teaches “tone scale functions” that are “designed to reduce the image dynamic range,” so the image dynamic range is enhanced. EX1056, [0006], [0060]; EX1003, ¶325. A POSA would thus have understood that Gindele's tonal range (*i.e.*, dynamic range) correction capability would be beneficial to the camera of Sarbadhikari (also seeking to

enhance dynamic range) and Katagiri because Gindele's tonal range (*i.e.*, dynamic range) enhancement enhances or improves Sarbadhikari's camera also designed to achieve "dynamic range optimization" using "dynamic range optimization tables." EX1003, ¶325.

A POSA would have been motivated to modify Sarbadhikari and Katagiri in light of Gindele. Sarbadhikari is designed to enhance the dynamic range of a captured picture, as compared to Gindele aiming to tonally enhance the dynamic range of a captured image, which would have motivated a POSA to use Gindele's teachings to further improve or enhance Sarbadhikari's dynamic range enhancement capability. EX1003, ¶327. Gindele teaches that its tonal enhancement capability also enhances the color characteristics of a digital image. EX1056, [0002], [0017]; EX1003, ¶328. Sarbadhikari also aims to enhance color characteristics of a captured image by color interpolation, color balance, color correction, and color reproduction algorithms. EX1004, 4:63-66; 8:32-36; EX1003, ¶328. A POSA would have been further motivated by Gindele to use Gindele's teachings to further improve or enhance Sarbadhikari's color correction or reproduction capability. EX1003, ¶¶325, 329.

A POSA would have had a reasonable expectation of success in modifying Sarbadhikari and Katagiri in light of Gindele because a POSA would have simply used Sarbadhikari's processor (20) to execute the tonal enhancement functionality

taught in Gindele. EX1003, ¶329. A POSA would also have simply used Sarbadhikari's memory card (24) and/or RAM instruction memory (31) to store Gindele's "values and control parameters used to control and adjust tone scales that are stored in LUT (look-up-table)" and Sarbadhikari's user input section (A) together with the operation display (30) to instruct Sarbadhikari's processor (20) to perform tonal enhancements based on user's command. *Id.*

B. Claim 8

[8]: "The method of claim 2, wherein the user-adjustable variables include tonal range corrections."

As explained in the '266 patent, a POSA would have understood that "tonal range," which has the same meaning of "dynamic range," refers to the range of levels between the darkest (shadow) and lightest (highlight) pixels in an image and that "tonal range correction" means adjustment of variation of the range of levels between the darkest (shadow) and lightest (highlight) pixels. EX1001, 14:49-56; 5:47-50, 21:20-25; EX1003, ¶¶331-333.

Gindele teaches user-adjustable "tonal range corrections" to process corrections for captured images. EX1003, ¶334. Gindele teaches a digital camera (10b) with a digital image processor (20) processing captured images to produce "pleasing looking images." EX1056, [0044], Fig. 1; EX1003, ¶¶335, 336.

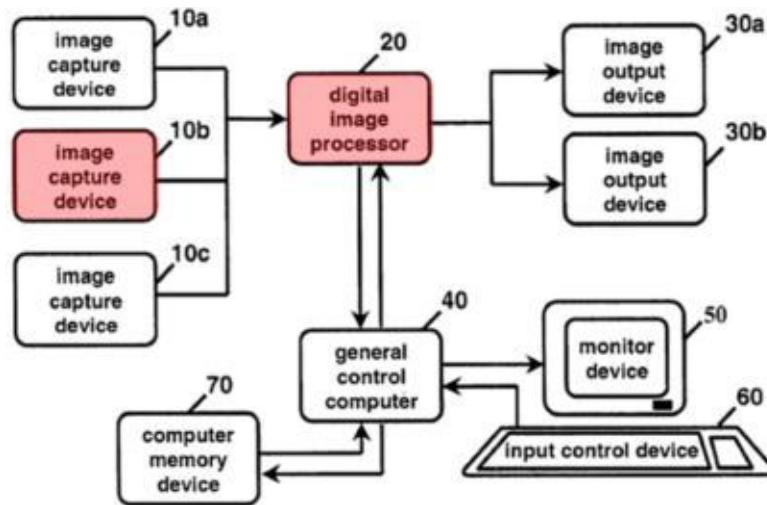
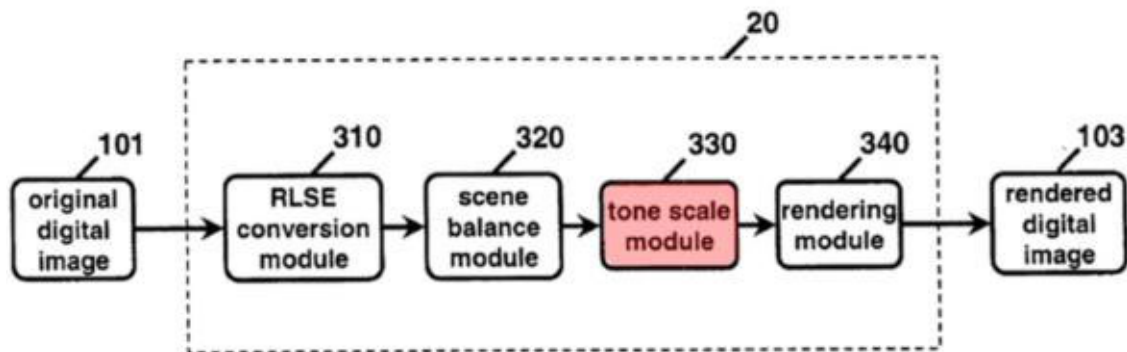


Fig. 1

EX1056, Fig. 1

Gindele further teaches that the digital image processor (20) has four cascaded image processing modules (310-340) including tone scale module (330) processing tonal corrections. EX1056, [0004], [0006], [0045], Fig. 2; EX1003, ¶¶337, 338.



EX1056, Fig. 2

Gindele explains how the tone scale module 330 changes highlight pixel value corresponding to a light region and a shadow pixel value corresponding to a dark

region in order to enhance the dynamic range of a captured image. EX1056, [0055], [0056], Fig. 3a; EX1003, ¶¶339, 340.

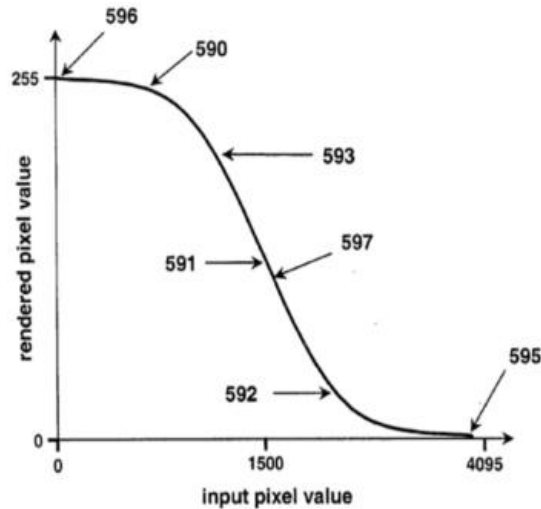
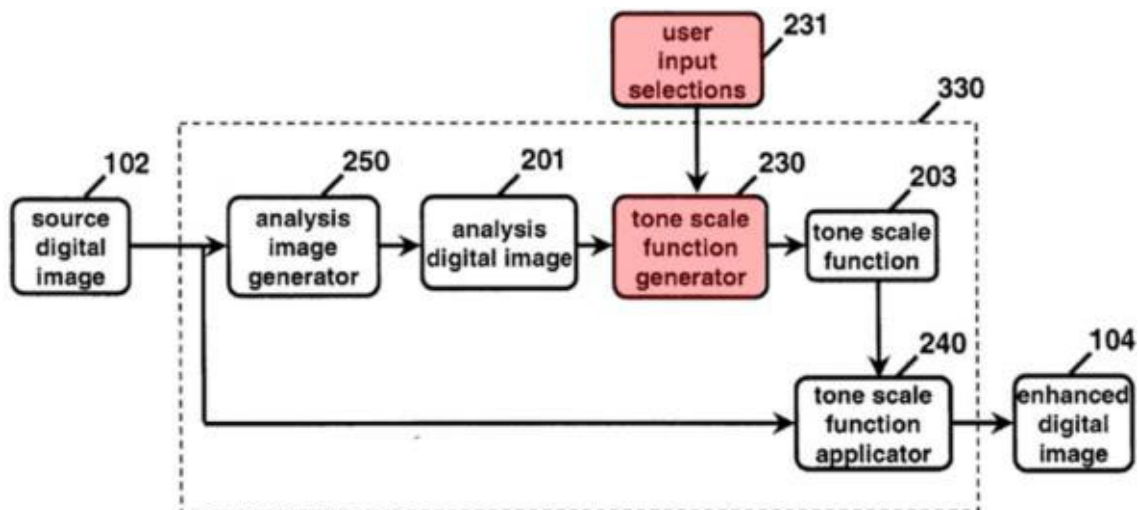


Fig. 3a

EX1056, Fig. 3a

Gindele discloses that the tonal range corrections are user-adjustable variables in a manual mode via user input selections (231) and a graphical user interface. EX1056, [0078], [0138], Fig. 4; EX1003, ¶¶341, 342.



EX1056, Fig. 4

Gindele further discloses that the values and control parameters used to control and adjust tone scales are stored in LUT (look-up-table) for later recall. EX1056, [0046], [0093], [0124], [0128]; EX1003, ¶342.

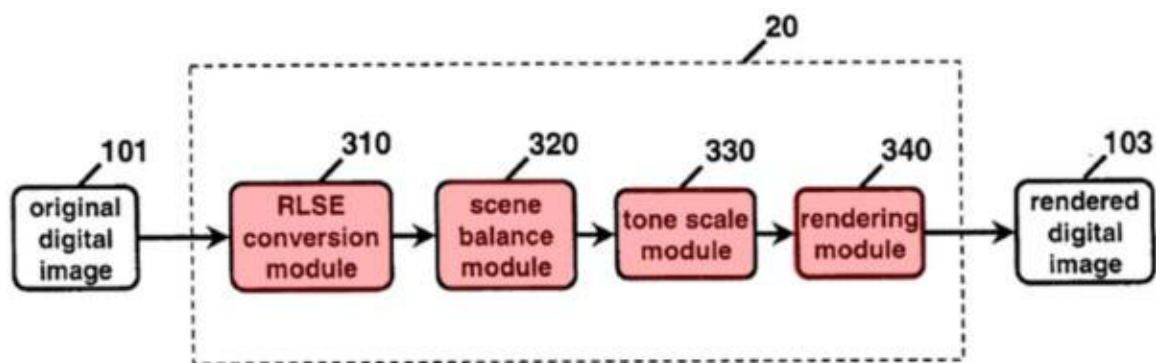
A POSA would have understood that Gindele’s digital camera in the manual user mode using the values and control parameter stored in the look-up-table performs image corrections for captured images using user-adjustable tonal corrections. EX1003, ¶343.

A POSA would have been motivated to modify Sarbadhikari and Katagiri in light of Gindele and such modification would have been made with reasonable expectation of success. *Supra* §VII(A); EX1003, ¶344.

C. Claim 13

[13]: “The method of claim 1, wherein the in-camera software processes image corrections based on one or more prior image corrections.”

Gindele teaches a series of “cascaded image processing modules” that represent a “digital image processing path.” EX1056, [0045], Fig. 2; EX1003, ¶346.



EX1056, Fig. 2

Gindele explains that the original digital image 101 first goes to modules (310, 320) where lightness and color balance adjustment for the original digital image is processed (EX1056, [0045], EX1003, ¶¶347, 348), and then goes to modules (330, 340) where toner enhancement and color transformation are processed to produce an output image. EX1056, [0052], [0060]; EX1003, ¶¶349, 350. Gindele explains that its invention is implemented in a software program. EX1056, [0039], EX1003, ¶351.

A POSA would have understood that Gindele uses in-camera software to process the cascaded modules (310-340), in which one image correction is performed in one module (*e.g.*, tone scale module (330)) based on prior image corrections in prior module(s) (*e.g.*, scene balance module (320)). EX1003, ¶352.

A POSA would have been motivated to modify Sarbadhikari and Katagiri in light of Gindele with reasonable expectation of success. *Supra* §VII(A); EX1003, ¶353.

D. Claim 27

[27]: “The method of claim 22, wherein the in-camera software processes image corrections based on one or more prior image corrections.”

Claim 27 is obvious over Sarbadhikari, Katagiri and Gindele for the reasons given regarding claims 13 and 22. *Supra* §§VII(C) and V(G); EX1003, ¶355.

IX. Ground 4: Claims 11-12 And 25-26 Would Have Been Obvious In Light Of Sarbadhikari, Katagiri And Yamasaki

A. Motivation to Combine

Sarbadhikari and Katagiri are analogous art to the '266 patent. *Supra* §V(A).

Similarly, Yamasaki teaches a digital camera performing image corrections for images captured by a lens and an image sensor by digitally separating a principal object from background in a captured image and digitally manipulating the aperture of the background portion to achieve a special effect such as blurring the background portion. EX1028, [0007], [0033], [0052]-[0053], [0068], [0076], [0085], [0102], [0106]-[0107], [0110]-[0111], [0115], [0116], Figs. 1, 16-18; EX1003, ¶358. This is also the problem that the '266 patent sought to solve. EX1001, 13:38-49, 16:5-36, 33:2-5; EX1003, ¶358. Thus, Yamasaki is analogous art to the '266 patent. EX1003, ¶358. Moreover, Sarbadhikari, Katagiri, Yamasaki and the '266 patent list the H04N subclass under the International Classification. EX1003, ¶358.

A POSA would have understood that Yamasaki would be beneficial to Sarbadhikari and Katagiri. Sarbadhikari teaches user-adjustable aperture settings. *Supra* §VI(A). A POSA would have understood that aperture (i.e., DOF) adjustment is important to a specific type of scene or subject being captured. EX1004, 5:13-17; EX1003, ¶360. Yamasaki teaches a digital camera digitally separating a principal object from background in a captured image and digitally manipulating the aperture (i.e., DOF) of the background portion to achieve a special effect such as blurring the background portion. EX1028, [0053], [0068], [0076], [0085], [0102], [0103], [0115]; EX1003, ¶361. A POSA would have understood that Yamasaki would be beneficial to the camera of Sarbadhikari and Katagiri to enhance the captured image

for a specific type of scene or subject by adding blur effect to a specific portion of the captured images in a digital process. EX1003, ¶362.

A POSA would have been motivated to modify Sarbadhikari in light of Yamasaki. Sarbadhikari teaches modifying captured image to provide “special effect” such as softening the image for portraits. *Compare* EX1004, 5:5-10; 7:38-43, 8:61-9:1, 10:16-22 *with* EX1001, 16:18-25; 13:59-14:3; EX1003, ¶¶364, 365. Sarbadhikari would have motivated a POSA to use Yamasaki to digitally manipulate aperture (*i.e.*, DOF) of a specific portion (*e.g.*, background) in a captured image of a specific type (*e.g.*, portraits) to obtain special effect such as blurring the background. EX1003, ¶366.

It was also well-known to digitally manipulate aperture (*i.e.*, DOF) of a portion of a captured image to achieve a special effect such as blurring the background portion of the captured image. EX1057, [0063], [0073], [0076], [0077], [0084], [0094] Figs. 1, 4; EX1058, 1:62-65, 3:20-5:11, Figs. 1, 8, 11A-11C; EX1003, ¶367.

A POSA would have had a reasonable expectation of success in modifying Sarbadhikari and Katagiri in light of Yamasaki because a POSA would have simply used Sarbadhikari’s processor (20) to execute Yamasaki’s separation and blurring processes and Sarbadhikari’s RAM instruction memory (31) and/or memory card (24) to store Yamasaki’s operation programs and filter matrices for Sarbadhikari’s

processor (20) to execute Yamasaki's separation and blurring processes. EX1003, ¶368.

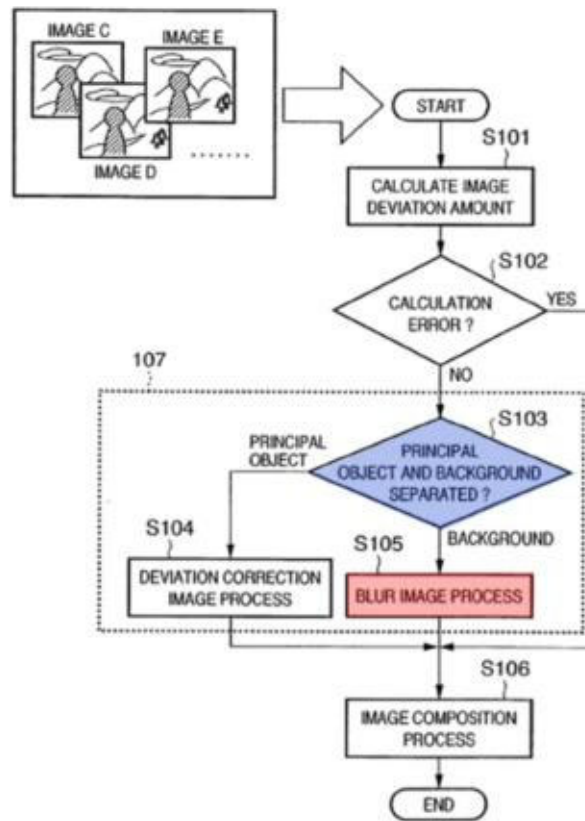
B. Claim 11

[11]: “The method of claim 1, wherein the digitally processing the at least one captured image for image correction further comprises adjusting a depth of field of an image.”

According to the '266 patent, (1) DOF depends on aperture setting; (2) once an image is captured and sent to the camera for digital processing, the aperture and DOF cannot be optically changed; and (3) digital manipulation of aperture (i.e., DOF) for a separated object from a captured image provides a special effect (e.g., blurring of background). EX1001, 13:38-49, 16:5-36, 33:2-5; EX1003, ¶370.

Yamasaki teaches a digital camera (EX1028, [0047]. Fig. 17) overcoming a problem, which a camera with small size aperture cannot add blur effect to a captured image, by digitally separating a principal object from background in a captured image and digitally manipulating the aperture (i.e., DOF) of the background portion to achieve a special effect such as blurring the background portion. EX1028, [0052], [0053], [0068], [0076], [0085], [0102], [0103], [0115], Fig. 1; EX1003, ¶¶372, 373.

FIG. 1



EX1028, Fig. 1

According to Yamasaki, the blur effect is added by convolving 9x9 blur filter matrices using a software program, which are pre-stored in ROM 407 of the central controller 404 (EX1028, [0047], [0095], [0127], [0109]-[0111], [0124], Fig. 17) and selectively used by a user to his/her favor (*id.*, [0098]), to the image data of the background portion. EX1028, [0095]-[0097], [0114]-[0115]; EX1003, ¶¶373, 374.

A POSA would have understood that Yamasaki teaches a digital camera that adjusts DOF of a captured image by using an in-camera software program (*i.e.*, in-camera software) stored in ROM of a central processor (*i.e.*, in-camera hardware) to digitally separate a specific portion (*e.g.*, background) from another specific portion

(*e.g.*, principal object) and manipulate aperture (*i.e.*, DOF) of the separated portion by applying digital blur filtration so that a higher quality image with a natural blur effect is obtained. EX1003, ¶375.

A POSA would have been motivated to modify Sarbadhikari and Katagiri in light of Yamasaki with reasonable expectation of success. *Supra* §VIII(A); EX1003, ¶376.

C. Claim 12

[12]: “The method of claim 1, further comprising adjusting a depth of field of an image after capture of the image using the in-camera software.”

Claim 12 is obvious over Sarbadhikari, Katagiri and Yamasaki for the reasons given regarding claims 1 and 11. *Supra* §§V(B) and VIII(B); EX1003, ¶378.

D. Claim 25

[25]: “The method of claim 22, wherein the digitally processing the at least one captured image for image correction further comprises adjusting a depth of field of an image.”

Claim 25 is obvious over Sarbadhikari, Katagiri and Yamasaki for the reasons given regarding claims 22 and 11. *Supra* §§V(G) and VIII(B); EX1003, ¶380.

E. Claim 26

[26]: “The method of claim 22, further comprising adjusting a depth of field of an image after capture of the image using the in-camera software.”

Claim 26 is obvious over Sarbadhikari, Katagiri and Yamasaki for the reasons given regarding claims 22, 11 and 12. *Supra* §§V(G) and VIII(B)(C); EX1003, ¶382.

X. Ground 5: Claim 21 Would Have Been Obvious In Light Of Sarbadhikari, Katagiri And Ito

A. Motivation to Combine

Sarbadhikari and Katagiri are analogous to the '266 patent. *Supra* §V(A). Similarly, Ito teaches a digital camera that performs image corrections for images captured by a lens and an image sensor by applying a fast Fourier transform to improve or enhance sharpness of captured images. EX1038, [0007]-[0010], [0014], [0015]; EX1003, ¶385. This is the same problem the '266 patent intended to solve. AEX1001, 31:50-56; EX1003, ¶385. Thus, Ito is analogous art to the '266 patent. EX1003, ¶385. Moreover, Sarbadhikari, Katagiri, Ito and the '266 patent list the H04N subclass under the International Classification. EX1003, ¶385.

A POSA would have understood that Ito would be beneficial to Sarbadhikari and Katagiri. Ito teaches chromatic aberration, which causes loss of sharpness in an image, due to lens characteristics. EX1038, [0002], [0003]; EX1003, ¶386. Ito's chromatic aberration correction capability using a fast Fourier transform ("FFT") would be beneficial to Sarbadhikari because Sarbadhikari's lens characteristics may also cause the same problem due to the lens type. EX1003, ¶386.

As Sarbadhikari teaches various image correction algorithms for enhancing image color and sharpness, Ito's teachings would have motivated a POSA to use an FFT in Sarbadhikari's camera to enhance color and sharpness of a captured image. EX1004, 4:57-5:1; EX1003, ¶387.

Notably, Patent Owner admitted during prosecution of a related patent (*i.e.*, '339 patent) that using fast Fourier transformation as an algorithm in digital image processing was well-known and there is no reason not to include a fast Fourier transform to correct aberrations. EX1039, 142-143, 155; EX1003, ¶¶388, 389.

As admitted by Patent Owner, it was well-known in the art to use FFT to process image corrections. *See* EX1037, 2:30-32, 5:5-11, 6:2-8, 20:67-21:3, 23:59-24:4, 17:51-18:4, 18:5-22, 19:47-20:15, Fig. 22; EX1040, Abstract, 1:7-11, 1:31-49, 3:1-12, 6:3-20, 9:36-67; EX1041, Abstract, 9:4-16; EX1042, 5:37-42, 9:43-48; EX1072, [029], Fig. 6; EX1003, ¶390.

A POSA would have had a reasonable expectation of success in modifying Sarbadhikari and Katagiri in light of Ito because a POSA would have simply used Sarbadhikari's processor (20) to perform the FFT and Sarbadhikari's RAM instruction memory (31) and/or memory card (24) to store Ito's FFT algorithm and focal-length correction values. EX1003, ¶391.

B. Claim 21

[21]: “The method of claim 1, wherein the image processing algorithms include a fast Fourier transform.”

According to the '266 patent, FFT is a digital filter or algorithm used to sharpen or soften an image. EX1001, 31:50-56; EX1003, ¶393.

Ito teaches a digital video camera which performs FFT (the claimed “fast Fourier transform”) to correct chromatic aberration, which causes loss of sharpness

in an image, based on correction values corresponding to focal length (the claimed “image processing algorithms”). EX1038, [0003], [0010], [0017]; EX1003, ¶394.

A POSA would have been motivated to modify Sarbadhikari and Katagiri in light of Ito with reasonable expectation of success. *Supra* §IX(A); EX1003, ¶¶395, 396.

XI. Ground 6: Claim 28 Would Have Been Obvious In Light Of Sarbadhikari, Katagiri And Miyazawa

A. Motivation to Combine

Sarbadhikari and Katagiri are analogous to the ’266 patent. *Supra* §V(A). Similarly, Miyazawa teaches a digital camera performing image corrections for images captured by a lens and an image sensor which cause image failure due to dust or dirt on the image sensor. EX1043, 1:16-18, 1:23-35, 1:38-60, 4:8-33; EX1003, ¶400. This the same problem that the ’266 patent intended to solve. EX1001, 16:45-17:21; EX1003, ¶400. Thus, Miyazawa is analogous art to the ’266 patent. EX1003, ¶400. Moreover, Sarbadhikari, Katagiri, Miyazawa and the ’266 patent list the H04N subclass under the International Classification. EX1003, ¶400.

A POSA would have understood that it would have been beneficial to add Miyazawa’s dirt detecting, judging and correcting capability to the camera of Sarbadhikari and Katagiri. EX1003, ¶401. Miyazawa teaches that “dirt or dust” adhered to the image sensor may cause image failure taken by a camera using interchangeable lens because “light does not enter a picture element portion on

which dirt is adhered” to the image sensor.” EX1043, 1:23-34; EX1003, ¶401. Sarbadhikari teaches an exposure section 10 for directing image light from a subject toward an image sensor 12, which includes a two-dimensional array of photosites corresponding to picture elements of image, and an A/D converter 16 generating a digital image signal from analog input signals for each picture element. EX1004, 5:59-6:10; EX1003, ¶401. Miyazawa would be beneficial to the camera of Sarbadhikari and Katagiri with dirt or dust that is adhered to Sarbadhikari’s image sensor 12 such that image light cannot enter a picture element of Sarbadhikari’s image sensor 12. EX1003, ¶402.

A POSA would have been motivated to add Miyazawa’s dirt detecting, judging and correcting capability to the camera of Sarbadhikari and Katagiri because Sarbadhikari’s image sensor 12 may have dirt or dust on it and there is nothing in Sarbadhikari or Katagiri dissuading a POSA from using an interchangeable lens. And it was well-known in the art that a digital camera can use an interchangeable or detachable lens. *See* EX1018, [0066]; EX1019, 6:41-42; EX1020, 1:30-33; EX1005, [0008]; EX1003, ¶403.

It was also well-known in the art to detect dust on a digital image sensor and digitally correct image failure caused by the dust on the image sensor of a digital camera. EX1048, Abstract, [0006]-[0014]; EX1049, [0035], [0040], [0042], [0047]-[0060], Fig. 2; EX1003, ¶404.

A POSA would have had a reasonable expectation of success in modifying the camera of Sarbadhikari and Katagiri by adding Miyazawa's dirt detecting, judging and correcting capability to Sarbadhikari's processor 20 and the information relating to dirt position and picture element defect positions stored in Miyazawa's memory (116, 117) to Sarbadhikari's memory card 24 and/or RAM instruction memory 31 with skills. EX1003, ¶405.

B. Claim 28

[28]: “The method of claim 1, further comprising: detecting dust on the digital image sensor; and digitally correcting for dust on a digital image sensor of the digital camera.”

Miyazawa teaches a digital camera having a detachable lens, a judging section for judging whether an image failure is caused due to dirt adhering to an image sensor, a memory for storing a position of a picture element of the image sensor corresponding to image sensor data causing image failure (*i.e.*, position of dirt) when the judging section judged that image failure has been caused; and a correcting section for correcting the image sensor data output from the image sensor based on image position data stored in the memory when a picture is photographed after the lens is interchanged. EX1043, 1:16-60; EX1003, ¶¶407, 408. Miyazawa teaches that the CPU 110 controls the operations and the dirt position and the picture element defect positions are stored in memory (116, 117). EX1043, 4:8-33; EX1003, ¶¶407, 408.

A POSA would have understood that Miyazawa's judging section performs "detecting dust on the digital image sensor" recited in claim 28 and Miyazawa's correcting section performs "digitally correcting for dust on a digital image sensor of the digital camera" recited in claim 28. EX1003, ¶409.

A POSA would have been motivated to modify Sarbadhikari and Katagiri in light of Miyazawa with reasonable expectation of success. *Supra* §X(A); EX1003, ¶410.

XII. Ground 7: Claim 29 Would Have Been Obvious In Light Of Sarbadhikari, Katagiri And Hamilton

A. Motivation to Combine

Sarbadhikari and Katagiri are analogous art to the '266 patent. *Supra* §V(A).

Similarly, Hamilton teaches a digital camera that performs image corrections for images captured by a lens and an image sensor which cause image failure due to pre-existing defective pixels on the image sensor. EX1044, Abstract, [0002], [0003], [0004], [0018]-[0020], [0025], Fig. 1; EX1003, ¶414. This is the same problem that the '266 patent sought to solve. EX1001, 17:4-15; EX1003, ¶414. Thus, Hamilton is analogous art to the '266 patent. EX1003, ¶414. Moreover, Sarbadhikari, Katagiri, Hamilton and the '266 patent list the H04N subclass under the International Classification. *Id.*

A POSA would have understood that it would have been beneficial to add Hamilton's image correction capability for dead pixels to the camera of Sarbadhikari

and Katagiri. According to Hamilton, defective pixels in an image sensor may cause corrupted data in a digital image. EX1044, Abstract, [0003]; EX1003, ¶415. Sarbadhikari teaches a CCD image sensor 12 (EX1004, 6:3-5, Fig. 2) and certain data related to “sensor defect locations” stored in a removable memory. EX1004, 3:2-7; EX1003, ¶415. Hamilton’s image correction capability for dead pixels would be beneficial to Sarbadhikari, which expressly teaches or suggests sensor defects and their locations. EX1003, ¶415.

A POSA would have been motivated to add Hamilton’s image correction capability for dead pixels to Sarbadhikari’s camera to correct corrupted data caused by dead pixels in Sarbadhikari’s image sensor. EX1003, ¶416.

It was well-known to correct image failures caused by dead pixels of digital image sensor in a digital camera. EX1045, Abstract, [0002], [0006]- [0008], [0019]- [0025], [0027], [0029]-[0030], Figs. 3, 4A and 4B; EX1046, 1:6-8; EX1047, Abstract; EX1003, ¶417.

A POSA would have had a reasonable expectation of success in modifying Sarbadhikari and Katagiri in light of Hamilton to include Hamilton’s “defect map” and “interpolation algorithm” in Sarbadhikari’s memory card 24 and/or RAM instruction memory 31 in order for Sarbadhikari’s processor 20 or digital signal processor 22 to correct corrupted data caused by dead pixels in digital image sensor with conventional skills. EX1003, ¶418.

B. Claim 29

[29]: “The method of claim 1, further comprising: correcting for a dead pixel on a digital image sensor of the digital camera.”

The '266 patent characterizes dead pixels in two categories: “permanent pixel dysfunctions” and “temporary pixel aberrations” and explains that “a map is built to discover, isolate and interpolate bad pixels, which are a permanent problem revealing a key limit in digital sensor technology” and “[i]n both cases, the camera works from these maps to correct the aberrations on a pixel-level.” *See* EX1001, 17:4-15; EX1003, ¶420.

Hamilton discloses an electronic camera that has a digital signal processor 22, which performs corrections for a line of corrupted data in a digital image formed by an image sensor with a defective pixel including the steps of “(a) providing a defect map which identifies the position of the defective pixel and specifies the line of pixels which during readout will be caused to have corrupted data; (b) capturing the digital image in the image sensor and readout such digital image to provide the digital image with the line of pixels in the digital image having corrupted data; (c) computing classifiers based on adjacent non-corrupted pixel data which indicate that there is a horizontal edge or a diagonal edge feature which passes through the defective column; and (d) adaptively replacing the data in the corrupted image pixels by selecting an *algorithm* which correponds [*sic*] to the edge feature identified by the classifier and using the valid data in the neighboring non-corrupted pixels of the

selected edge feature.” EX1044, [0002], [0004], [0018]-[0020], [0006]-[0010], Fig. 1; EX1003, ¶¶422, 423.

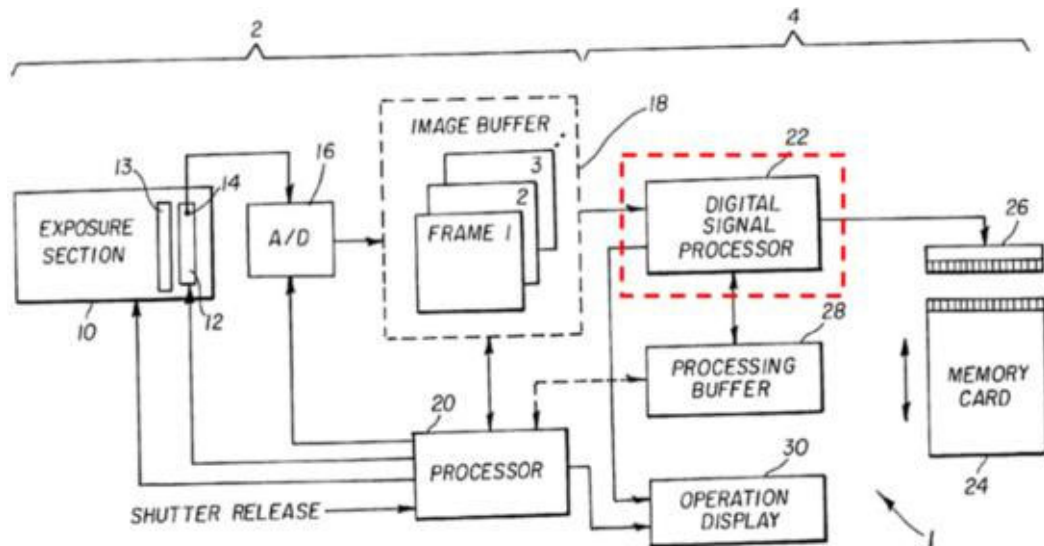


FIG. 1

EX1044, Fig. 1

A POSA would have understood that Hamilton’s teachings of using “defect map” and “interpolation algorithm” to correct defects in a digital image caused by a pre-existing defect in a pixel of image sensor constitutes “correcting for a dead pixel on a digital image sensor of the digital camera” recited in claim 29. EX1003, ¶424.

A POSA would have been motivated to modify Sarbadhikari and Katagiri in light of Hamilton with reasonable expectation of success. *Supra* §XI(A); EX1003, ¶425.

XIII. Secondary Considerations Of Non-Obviousness

Petitioner is unaware of any applicable secondary considerations of non-obviousness. None were identified or asserted during prosecution. *See generally*

EX1002. Regardless, even if such considerations existed, none would overcome the strong *prima facie* showing of obviousness. EX1003, ¶427.

XIV. Discretionary Denial Is Unwarranted

A. *General Plastic* Is Generally Inapplicable And Favors Petitioner

In *General Plastic*, the Board sets forth factors to be analyzed for follow-on petitions. However, Petitioner respectfully submits that the *General Plastic* analysis is inapplicable here. If trial is instituted in IPR2024-01374, Petitioner will move to join that proceeding as an understudy. Such circumstances “effectively neutralize[]” *General Plastic*. See *Apple Inc. v. Uniloc 2017 LLC*, IPR2018-00580, Paper 13 at 10 (PTAB Aug. 21, 2018) (instituting joinder copycat petition where petitioner agreed to assume passive understudy role, noting circumstances “effectively neutraliz[es] the General Plastic factors”); see also *Celltrion, Inc. v. Genentech, Inc.*, IPR2019-01019, Paper 11 at 10 (PTAB Oct. 30, 2018) (joinder motion “effectively obviates any concerns of serial harassment and unnecessary expenditures of resources”); *Code200, UAB et al. v. Bright Data Ltd.*, IPR2022-00861, Paper 18 (PTAB Aug. 23, 2022) (“*Code200*”) (case remanded by Director after finding road-mapping and other General Plastic concerns generally inapplicable or of limited relevance when a motion for joinder presents a copycat petition).

General Plastic factors counsel in favor of instituting the present IPR and joining it with the Nikon IPR, if instituted. *General Plastic Indus. Co., Ltd. v. Canon*

Kabushiki Kaisha, IPR2016-01357, slip op. at 16 (PTAB Sept. 6, 2017) (Paper 19) (precedential as to §II.B.4.i).

The first three *General Plastic* factors strongly favor Petitioner. Petitioner has not previously filed an IPR challenge to the '266 patent, Petitioner included a *Sotera* stipulation in its Petition, and there are no road-mapping concerns as Petitioner has filed a copycat of the Nikon Petition. These factors counsel against discretionary denial. *Code200*, Vidal Remand (Paper 18) at 4-6.

The fourth, fifth and seventh *General Plastic* factors have limited relevance when a joinder motion with a copycat petition is presented. *Code200*, Vidal Remand (Paper 18) at 6. In any event, those factors favor Petitioner as the joinder motion will be filed promptly after institution of the Nikon IPR and there should be no delay in the Nikon IPR if Petitioner's forthcoming joinder Motion is granted.

The sixth factor favors Petitioner as it is "the Board's 'mission to improve patent quality and restore confidence in the presumption of validity that comes with issued patents'" which "outweighs the impact on Board resources needed to evaluate the merits of a petition." *Code200*, Vidal Remand (Paper 18) at 6.

Accordingly, all the *General Plastic* factors counsel against discretionary denial and favor granting Petitioner's forthcoming joinder Motion. "[C]oncerns of fairness are outweighed by the benefits to the patent system of improving patent quality by reviewing the merits of the challenges raised in the petition[], which have

not been addressed to date.” *Code200*, Vidal Remand (Paper 18) at 6, *citing General Plastic* at 16; *see also Samsung Elecs. Am., Inc. v. Uniloc Lux. S.A.*, IPR2017-01797, Paper 8 at 33 (P.T.A.B. Feb. 6, 2018) (“Patent Owner’s complaint about the multiple [IPR] petitions filed against [its] patent is not persuasive when the volume appears to be a direct result of its own litigation activity.”).

B. The Board Should Not Deny Institution Under *Fintiv*

Institution is appropriate under the test in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 6 (P.T.A.B. Mar. 20, 2020) (precedential) (“*Fintiv*”), as clarified by Director Vidal’s June 21, 2022 interim procedure for discretionary denials (the “June 21st Memo”) available at: https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621.pdf.

In determining whether to exercise discretion to deny institution in view of a parallel proceeding, the Board considers the *Fintiv* factors and “takes a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Fintiv*, IPR2020-00019, Paper 11 at 6. The June 21st Memo explained that “the PTAB will not rely on the *Fintiv* factors to discretionarily deny institution in view of parallel district court litigation where”—as here—“a petition presents compelling evidence of unpatentability.” June 21st Memo at 2.

As to the fourth and dispositive factor here (overlap between issues), Petitioner stipulates that, if this IPR is instituted, Petitioner will not pursue the grounds raised, or that reasonably could have been raised, in this IPR in district court proceedings. *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 18-19 (P.T.A.B. Dec. 1, 2020) (precedential). There is therefore no overlap with arguments made in the district court. This stipulation “mitigates concerns of potentially conflicting decisions and duplicative efforts between the district court and the PTAB,” and the Director has clarified that the PTAB will not discretionarily deny institution where Petitioners have made a *Sotera* stipulation. June 21st Memo, 7-8. Discretionary denial under *Fintiv* is inappropriate.

C. The Board Should Not Deny Institution Under 35 U.S.C. §325(d)

The Board also should not exercise its discretion under §325(d) to deny institution. This Petition presents the same arguments and evidence that is presented in IPR2024-01374 and Petitioner intends to seek joinder with that proceeding. No additional prior art or grounds are raised herein, and an *Advanced Bionics* analysis is inapplicable should IPR2024-01374 be instituted and joinder to that proceeding be granted.

XV. Mandatory Notices

A. Real Party-in-Interest

Petitioner certifies that Samsung Electronics Corp., Ltd. and Samsung Electronics America, Inc. are the only real parties-in-interest.

B. Related Matters

The Nikon IPR and Sony IPR involve the '266 Patent. *See* IPR2024-01046, IPR2024-01374.

The following district court actions involve the '266 Patent.

1. U.S. District Court for the Eastern District of Texas.

(i) *Optimum Imaging Technologies LLC v. FUJIFILM Corporation*, Case No. 4-23-cv-00922; (ii) *Optimum Imaging Technologies LLC v. Nikon Corporation*, Case No. 4-23-cv-00923; (iii) *Optimum Imaging Technologies LLC v. Olympus Corporation, et al.*, Case No. 4-23-cv-00924; (iv) *Optimum Imaging Technologies LLC v. Panasonic Corporation*, Case No. 4-23-cv-00926; (v) *Optimum Imaging Technologies LLC v. Sony Corporation*, Case No. 4-23-cv-00928; (vi) *Optimum Imaging Technologies LLC v. Samsung Electronics Co., Ltd.*, Case No. 4:23-cv-00927.

2. U.S. District Court for the Western District of Texas

Canon Inc. v. Optimum Imaging Technologies LLC, Case No. 1:20-cv-01238 (Terminated April 28, 2021).

3. U.S. District Court for the Northern District of California

FUJIFILM North America Corporation v. Optimum Imaging Technologies LLC, Case No. 4:24-cv-03297.

Petitioner also notes that the '266 Patent is in the same family as two other patents: U.S. Patent No. 8,451,339 and U.S. Patent No. 7,612,805. Nikon is currently challenging the '339 and '805 Patents, respectively, in IPR2024-01372, and IPR2024-01373. Sony has challenged these patents, respectively, in IPR2024-00924 and IPR2024-00925.

C. Lead and Back-up Counsel Under 37 C.F.R. §42.8(b)(3) and Service Information under 37 C.F.R. §42.8(b)(4)

Petitioner designates the following lead and back-up counsel:

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Service on Petitioner may be made by mail or hand delivery to: Greenberg Traurig, LLP, 1750 Tysons Boulevard, Suite 1000, McLean, VA 22102. Petitioner also consents to and prefers electronic service by emailing Samsung-OIT-IPRs@gtlaw.com and counsel of record.

D. Fees

The required fee is being paid electronically through P-TACTS.

Dated: January 23, 2025

Respectfully Submitted,

/Andrew R. Sommer/

Andrew R. Sommer

Reg. No. 53,932

CERTIFICATE OF WORD COUNT

The undersigned certifies that the foregoing PETITION FOR *INTER PARTES* REVIEW complies with the type volume limitation in 37 C.F.R. §42.24(a)(1)(i). According to the utilized word-processing system's word count, the petition—excluding the caption, table of contents, table of exhibits, mandatory notices, certificate of word count, and certificate of service—contains 13,913 words.

Dated: January 23, 2025

/Andrew R. Sommer/

Andrew R. Sommer

Attorney for Petitioner

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing **Petition for *Inter Partes* Review**, the associated **Powers of Attorney**, and **Exhibits 1001 to 1066 and 1068 to 1077** were served by UPS Priority Overnight on the correspondence address of record indicated in the Patent Office's Patent Center system for U.S. Patent No. 10,877,266:

The Law Office of Michael J. Scheer
5531 Murietta Avenue
Sherman Oaks, CA 91401
UNITED STATES

Dated: January 23, 2025

/Andrew R. Sommer/

Andrew R. Sommer

Attorney for Petitioner