

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO. LTD.,
SAMSUNG ELECTRONICS AMERICA, INC., and
GOOGLE LLC,
Petitioner,

v.

EYESMATCH LTD.,
Patent Owner.

IPR2024-00810
Patent 8,982,110 B2

Before THOMAS L. GIANNETTI, NEIL T. POWELL, and
SCOTT RAEVSKY, *Administrative Patent Judges*.

POWELL, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. BACKGROUND

Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Google LLC (collectively, “Petitioner”) filed a Petition for *inter partes* review of claims 1-18 of U.S. Patent No. 8,982,110 B2 (Ex. 1001, “the ’110 patent”). Paper 1 (“Pet.”). EyesMatch Ltd. (“Patent Owner”) filed a Preliminary Response. Paper 17 (“Prelim. Resp.”).

An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Having considered the arguments and the associated evidence, we determine that Petitioner has shown a reasonable likelihood that it will prevail in establishing the unpatentability of claim 1 of the ’110, and we institute *inter partes* review.

B. RELATED PROCEEDINGS

The parties indicate that the ’110 patent is involved in *EyesMatch Ltd. v. Samsung Electronics America, Inc.*, No. 2:23-cv-00363-JRG-RSP (E.D. Tex.) (“the Litigation”). Pet. 1; Paper 7, 1. Petitioner also notes that the ’110 patent was involved in *EyesMatch Ltd. v. Facebook, Inc.*, No. 1:21-cv-00111-RGA-JLH (D. Del.). Pet. 1. Petitioner further notes that the ’110 patent was challenged in a petition in IPR2022-00490. Pet. 1–2. Additionally, we note that the ’110 patent is related to U.S. Patent No. 8,982,109 B2 (“the ’109 patent”), which is challenged in a pending petition in IPR2024-00856.

C. THE '110 PATENT

The '110 patent describes interactive imaging and display systems for retail or service environments. Ex. 1001, 1:43–46. The '110 patent claims priority to and incorporates by reference U.S. Patent Application Serial Number 13/843,001 (“the '001”) application.¹ *Id.* at 1:23–39. The '110 patent “describe[s] a computerized technique that takes a video, a still, or a group of images, before or after the transformation described in [the '001 application], and continue the computerized method to address additional functionalities.” *Id.* 2:15–19.

In one example, the '110 patent discloses using “a camera and a flat panel display to provide the user with the experience of looking at a mirror.” *Id.* at 4:66–5:1. More specifically, the patent discloses manipulating, transforming, and displaying the camera’s image stream “to mimic a reflection in a mirror, rather than a recorded video stream.” *Id.* at 5:1–4. The patent shows “examples of a virtual mirror user interface (UI) flow that can be sequenced together to simulate a mirror experience” in Figures 14–16. *Id.* at 25:26–28. Figures 14 and 15 are reproduced below.

¹ The '001 application issued as the '109 patent, which, as noted above, is challenged in a petition in IPR2024-00856.

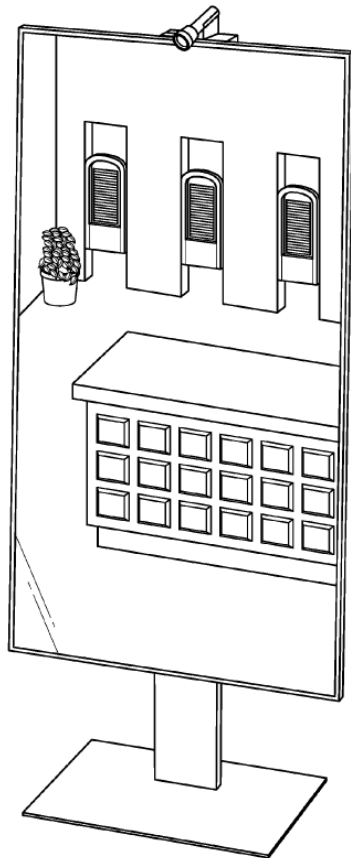


FIG. 14

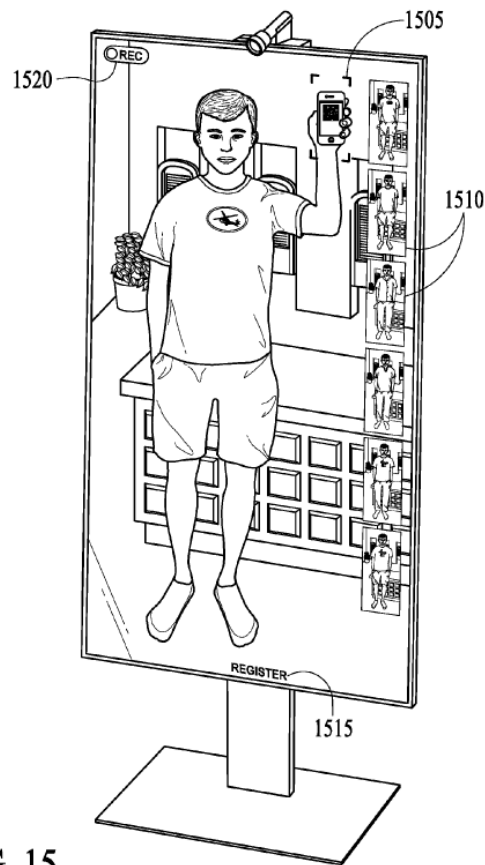


FIG. 15

“[Figure] 14 depicts an example of transformation on a camera stream to create a mirror effect on the background environment.” Ex. 1001, 4:41–43.

“[Figure] 15 illustrates an example of a virtual mirror with user recognition and authentication and with user interface.” *Id.* 4:44–45.

The system may operate in an idle mode or track a user in front of the camera:

[B]efore a user stands in front of the mirror, the system operates in an idle mode, during which the controller may or may not provide transformation to mimic a mirror reflection. Once the user enters a specified zone in front of the field of view of the camera, the processor is capable of tracking the user in the recorded image. Based on the tracking, the video engine of the processor can calculate a transformation of the image to mimic mirror behavior.

Ex. 1001, 25:36–43.

To generate an image mimicking a user looking into a mirror, the system may do distortion transformation:

The distortion transformation may include the steps: obtaining a digital image from the camera; flipping the image about a vertical axis so as to reverse right and left sides of the image; applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror; resizing the image to reduce variations caused by changes in the object's distance to the camera; and displaying the image on the monitor after performing the flipping, transformation mapping, and resizing.

Ex. 1001, 3:18–29. For example, the system may process the image to compensate for distortion stemming from the camera's setup geometry, as well as optic distortion:

[T]he image can be rearranged and transformed to compensate for distortion due to the setup geometry of the camera and optic distortion. Example of setup distortion factors include the user distance to the camera, the camera height, camera projection angle, the optics of the camera's FOV and other optic distortions.

Id. at 18:58–63.

An example of distortion from camera setup geometry appears in Figure 8 of the '001 application and '109 patent. This drawing is reproduced below.

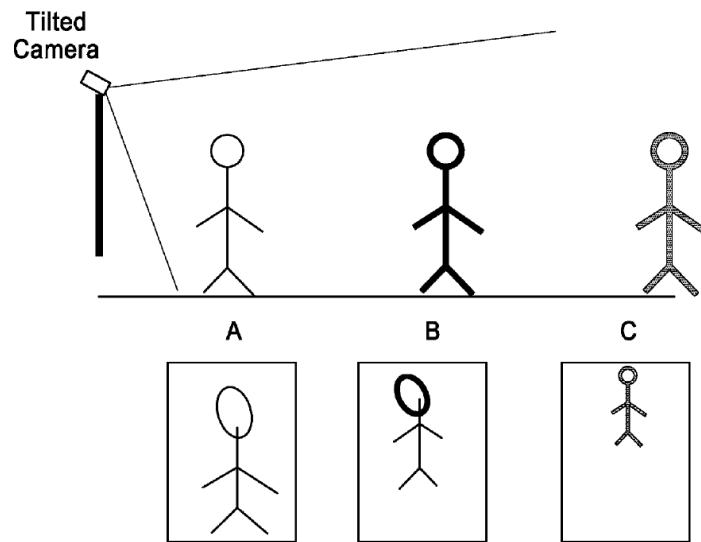


FIG. 8

Figure 8 of the '001 application and '109 patent “is a schematic illustrating a system wherein the camera is positioned above a monitor screen and is tilted downwards.” Ex. 1021, 4:25–27.

The '001 application discloses “performing tilt, elevation, and scale translations.” *Id.* at 24:4–5. A tilt transformation modifies an image from a downwardly pointed camera to look like the camera was directed horizontally straight. *Id.* at 23:46–51. An elevation transformation linearly modifies an image taken from a camera located outside the screen to look like an image taken from eye level. *Id.* at 23:53–58. “A scale transformation reduces the effect of size change with distance to the screen, so that the user sees almost constant size of himself in the screen, regardless of distance to the screen.” *Id.* at 23:65–24:1.

D. CHALLENGED CLAIMS

Of the challenged claims, claim 1 is independent. Each of claims 2-18 depends, directly or indirectly, from claim 1. Claim 1 is reproduced below with certain reformatting:²

1. [1[pre]] A computerized method for operating a display system, the display system having a camera, a monitor, and a processor, the method comprising:

[1[a]] operating the camera to generate a stream of images of the user;

[1[b]] operating the processor to detect the presence of the user in the stream of images;

[1[c]] operating the processor to apply adaptive transformation mapping to the stream of images captured by the camera to generate modified images that appear to be captured from a different point of view of the camera's actual point of view; and

[1[d]] displaying the modified images on the monitor;

[1[e]] wherein the different point of view corresponds to an image taken from a different angle and a different distance than the actual images captured by the camera; and

[1[f]] wherein during mirror tracking mode the processor utilizes the angle of the images captured by the camera and applies parametric input for a mapping transformation that changes imaging perspective of the images captured by the camera.

Ex. 1001, 35:52–36:5.

² We have added the same labels that Petitioner uses to identify portions of claim 1. *See* Pet. 4.

E. ASSERTED GROUNDS OF UNPATENTABILITY

Petitioner challenges the patentability of claims 1–18 of the
'110 patent on the following grounds (Pet. 8):

Claims Challenged	35 U.S.C. §	References
1–6, 10–12, 16, 17	103	Haan ³ , Francois ⁴
1–6, 10–12	103	Rosenberg ⁵ , Park ⁶
1–18	103	Geisner ⁷ , Lizee ⁸
7–9, 13–15, 18	103	Haan, Francois, Geisner
3, 4, 7–9, 11–18	103	Rosenberg, Park, Geisner

In support of its challenges, Petitioner also relies on the Declaration of Dr. Lina Karam, Ph.D. Ex. 1003.

II. REQUEST FOR DENIAL UNDER 35 U.S.C. § 314(a)

Institution of an *inter partes* review is discretionary. *See* 35 U.S.C. § 314(a) (authorizing institution of an *inter partes* review under particular circumstances, but not requiring institution under any circumstances);

³ U.S. Patent Application Publication No. 2011/0298910 A1, published Dec. 8, 2011 (Ex. 1005, “Haan”).

⁴ Francois, *Software Architecture for Computer Vision: Beyond Pipes and Filters*, Institute for Robotics and Intelligent Systems, 2003 (Ex. 1009, “Francois”).

⁵ U.S. Patent Application Publication No. 2007/0040033 A1, published Feb. 22, 2007 (Ex. 1006, “Rosenberg”).

⁶ U.S. Patent Application Publication No. 2007/0065039 A1, published Mar. 22, 2007 (Ex. 1011, “Park”).

⁷ U.S. Patent Application Publication No. 2011/0246329 A1, published Oct. 6, 2011 (Ex. 1007, “Geisner”).

⁸ International Patent Application Publication No. WO 2006/108278 A1, published Oct. 19, 2006 (Ex. 1008, “Lizee”).

Cuozzo Speed Techs., LLC v. Lee, 579 U.S. 261, 273 (2016) (“[T]he agency’s decision to deny a petition is a matter committed to the Patent Office’s discretion.”); *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1356 (2018) (“[Section] 314(a) invests the Director with discretion on the question whether to institute review” (emphasis omitted)); *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (“[T]he PTO is permitted, but never compelled, to institute an IPR proceeding.”).

Patent Owner argues that we should exercise our discretion under 35 U.S.C. § 314(a) and not institute trial because in view of the activities in the parallel district court litigation because (1) Patent Owner will oppose any motion for a stay in the district court; (2) there is every reason to believe that trial will occur several months before the Board’s projected statutory deadline for any final written decision; (3) the parties and district court will have substantially invested in claim construction and discovery; (4) with the exception of Google, the parties to this proceeding are also parties to the district court proceeding; and (5) Petitioner has failed to present a compelling unpatentability challenge. Prelim. Resp. 27–34.

When determining whether to exercise discretion to deny institution in view of a parallel proceeding, we consider the factors set forth in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 5–6 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”). “These factors relate to whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding.” *Id.* In evaluating the *Fintiv* factors, we take “a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review,”

recognizing that “there is some overlap among these factors” and that “[s]ome facts may be relevant to more than one factor.” *Id.* at 6.

In *Sotera Wireless, Inc. v. Massimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential), the Board declined to exercise its discretion to deny review under *Fintiv* where the patent owner stipulated “if IPR is instituted, they will not pursue in the District Court Litigation any ground raised or that could have been reasonably raised in an IPR.” *Sotera Wireless*, Paper 12 at 18.

On June 21, 2022, the Director of the United States Patent and Trademark Office issued a Memorandum setting forth an “Interim Procedure for Discretionary Denials in AIA Post Grant Proceedings with Parallel District Court Litigation” (“Guidance Memo”).⁹ The Guidance Memo states that “[c]onsistent with *Sotera Wireless, Inc.*, the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB.” Guidance Memo 3 (footnote and emphasis omitted).

Petitioner advises us that in the pending district court litigation, Petitioner has stipulated as follows:

Petitioners stipulate that, if the Patent Trial and Appeal Board institutes an IPR proceeding for U.S. Patent No. 8,982,110 on the grounds presented in the petition in IPR2024-00810, Petitioners will not pursue an invalidity defense in district court that the patent claims subject to the instituted IPR are invalid based on

⁹ Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.

grounds that were raised or reasonably could have been raised in the IPR.

Paper 18 (Updated Mandatory Notices), 1 (citing Ex. 1031). We determine that this stipulation is consistent in scope with the stipulation in *Sotera Wireless* cited approvingly in the Director’s Guidance Memo. Consistent with the Guidance Memo, therefore, we decline to exercise our discretion to deny institution under *Fintiv* in view of the parallel district court proceeding.

III. ANALYSIS

A. LEVEL OF ORDINARY SKILL IN THE ART

According to Petitioner, a person of ordinary skill in the art “as of December 18, 2012, would have a bachelor’s degree in electrical or computer engineering, or a closely related field such as computer science, and two years of work experience with image capture and processing systems or related fields.” Pet. 8 (citing Ex. 1003 ¶ 91). Petitioner adds that “[a] person with less and/or different education, but more relevant practical experience, or vice versa, may also meet this standard” and that “[t]he prior art also evidences such level of skill.” *Id.*

Patent Owner states that it “applies Petitioners’ proposed level of skill for purposes of this Preliminary Response and reserves the right to propose a different level of skill should the Board grant institution.” Prelim. Resp. 10.

At this stage, we adopt the formulation of the level of ordinary skill in the art proposed by Petitioner and applied by Patent Owner as consistent with the prior art before us in this proceeding.

B. CLAIM INTERPRETATION

In this *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (2023). Under the

principles set forth by the Federal Circuit, the “words of a claim ‘are generally given their ordinary and customary meaning,’” as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–1317).

Neither party has proposed claim constructions for our consideration. Petitioner states that “[n]o terms require construction because the claims encompass the prior-art mappings under any reasonable construction.” Pet. 13. Patent Owner similarly states that it “does not believe that resolution of any claim construction issue is necessary at this time to conclude that Petitioners have not shown that there is a reasonable likelihood that they would prevail with respect to at least one of the challenged claims.” Prelim. Resp. 10. However, “Patent Owner reserves the right to raise claim construction should the Board grant institution.” *Id.* at 11.

We construe only those claim terms and phrases necessary to our decision. *See, e.g., Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200

F.3d 795, 803 (Fed. Cir. 1999))). At this stage of the proceeding, we need not construe any claim terms and phrases to resolve a controversy.

C. ALLEGED OBVIOUSNESS OVER ROSENBERG AND PARK

1. *Overview of Rosenberg*

Rosenberg relates to “[a] digital mirror system . . . that emulates a traditional mirror by displaying real-time video imagery of a user who stands before it.” Ex. 1006, code (57). Embodiments of Rosenberg’s system “provide a wall-mounted flat panel display and one or more digital camera(s) configured to provide real-time images of a user who stands before the display.” *Id.* ¶ 26. The system’s camera may be “mounted directly above the screen area of the display, generally near the center,” which “is non-ideal because it provides the user with a view of himself or herself from a somewhat unnatural perspective as compared to a traditional mirror.” *Id.* ¶ 27. “In more advanced embodiments the camera is mounted within the screen area of the display itself, approximately at eye-level of typical users, for example, positioned behind the display surface and aimed through a transparent portion of the display.” *Id.* This serves to “provide the user with a natural and accurate visual perspective of himself or herself.” *Id.*

Figure 3 of Rosenberg is reproduced below:

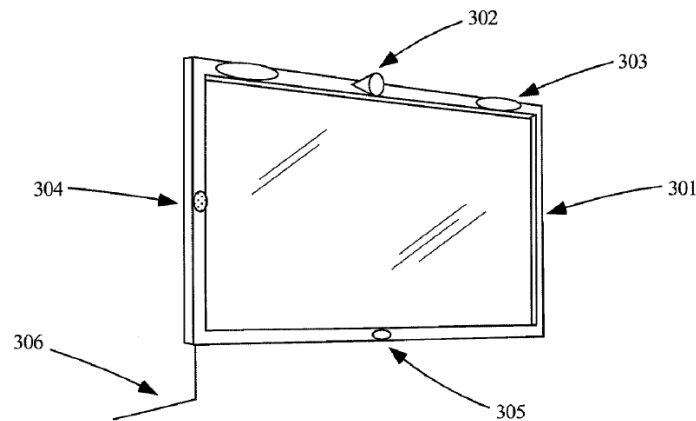


Figure 3 above illustrates wall mounted flat panel display 301 according to at least one embodiment. Ex. 1006 ¶ 62. The display includes video camera 302, light sources 303, microphones 304, proximity and/or motion sensors 305, and network connection 306. *Id.* ¶¶ 62–64, 69, 74.

Processor 1305 adjusts and/or modifies images that are displayed upon a screen to achieve mirroring features and functions not provided by a standard household wall mirror. *Id.* ¶¶ 35, 109, Fig. 13. In the embodiment of Figure 3, “the camera is mounted above the display screen.” *Id.* ¶ 75.

Rosenberg shows a different camera position in Figure 4, which is reproduced below:

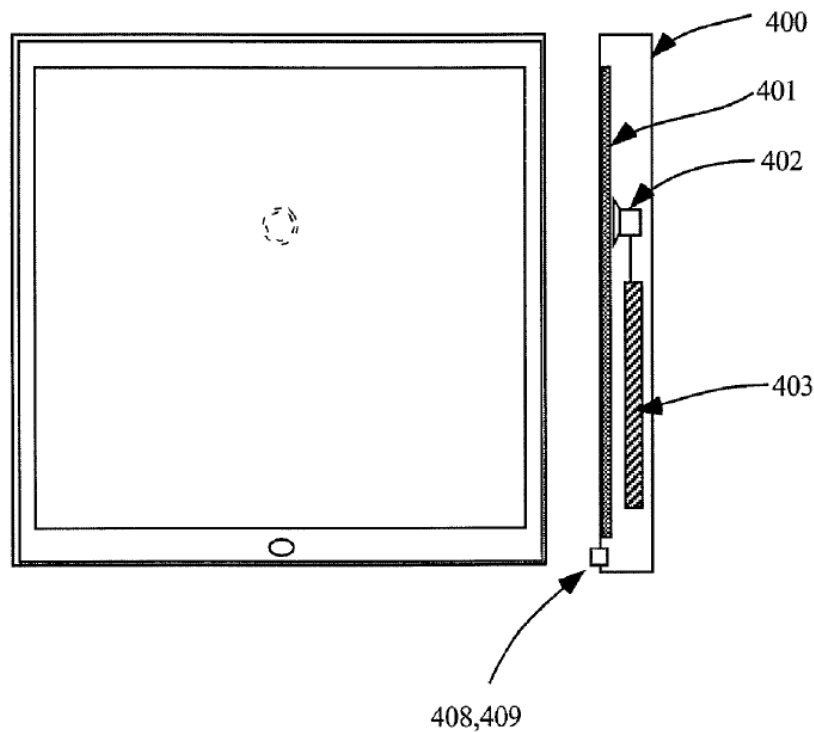


Fig. 4

Figure 4 above shows a digital mirror that has camera 402 mounted within the screen area. Ex. 1006 ¶ 75. Camera 402 may capture an image taken “from a vantage point that is centered horizontally with respect to the display screen and at an elevation vertically that generally corresponds with a user’s typical eye level. In this way the user is looking straight at the camera 402 when standing centered before the digital mirror display screen.” *Id.* To allow such camera placement, “[a] number of different methods and/or technologies may be employed.” *Id.* “In some embodiments a small region of active screen area is removed to allow the camera 402 to capture an image through the screen surface.” *Id.* Alternatively, “[s]ome

embodiments . . . can be configured to capture camera imagery through the display screen without having the small dead region.” *Id.* ¶ 76.

A digital mirror system is shown in operation in Figure 5, which is reproduced below:

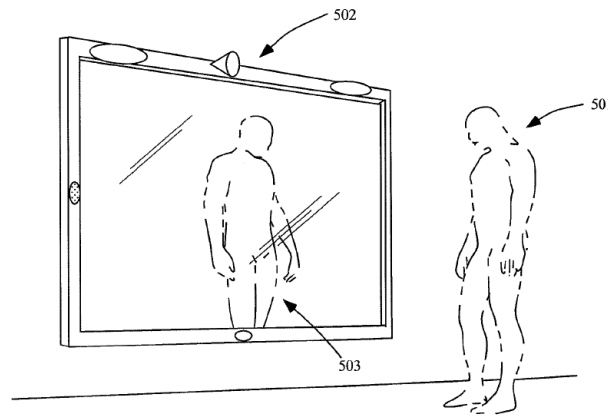


Figure 5 above illustrates a computer rendering of human user 501 standing in front of a wall-mounted embodiment of digital mirror system 502.

Ex. 1006 ¶ 77. The user’s image is captured as a real-time video image by a camera, and a representation of that real-time video image is displayed on a screen of digital mirror 502 “with a displayed size and scaling such that it appears like a traditional life-size mirror image 503.” *Id.* “In a traditional mirror emulation mode, the real-time video image is left-right inverted prior to display upon the screen,” providing user 501 with a visual impression that he or she is standing before a traditional wall mirror. *Id.*

Rosenberg also discloses a proximity and/or motion sensor for detecting when a user is before the display screen and automatically switches operational states when the user is standing before the screen for a threshold amount of time. *Id.* ¶¶ 54, 69.

2. *Overview of Park*

Park “relates to an image capturing apparatus with image compensation and a method thereof.” Ex. 1011 ¶ 3. Park discusses certain issues related to capturing images of a person with a camera, such as a phone’s camera. *E.g., id.* ¶¶ 5–6. Park shows an image captured by a camera positioned in front of a user in Figure 1B, which is reproduced below.

FIG. 1B



IN FRONT OF USER' S FACE

Figure 1B shows an image “captured by a general video photography device” (Ex. 1011 ¶ 18) “in front of the user’s face” (*id.* ¶ 7). In contrast, Park shows an image captured from below in Figure 1A, which is reproduced below.

FIG. 1A



BELOW USER' S FACE

Figure 1A shows an image “captured by a general video photography device” (Ex. 1011 ¶ 18) “located below a user’s face” (*id.* ¶ 7). Here, “the user’s chin appears to larger and the user’s forehead appears to be narrowed.” *Id.* Park explains users typically consider this distortion unnatural:

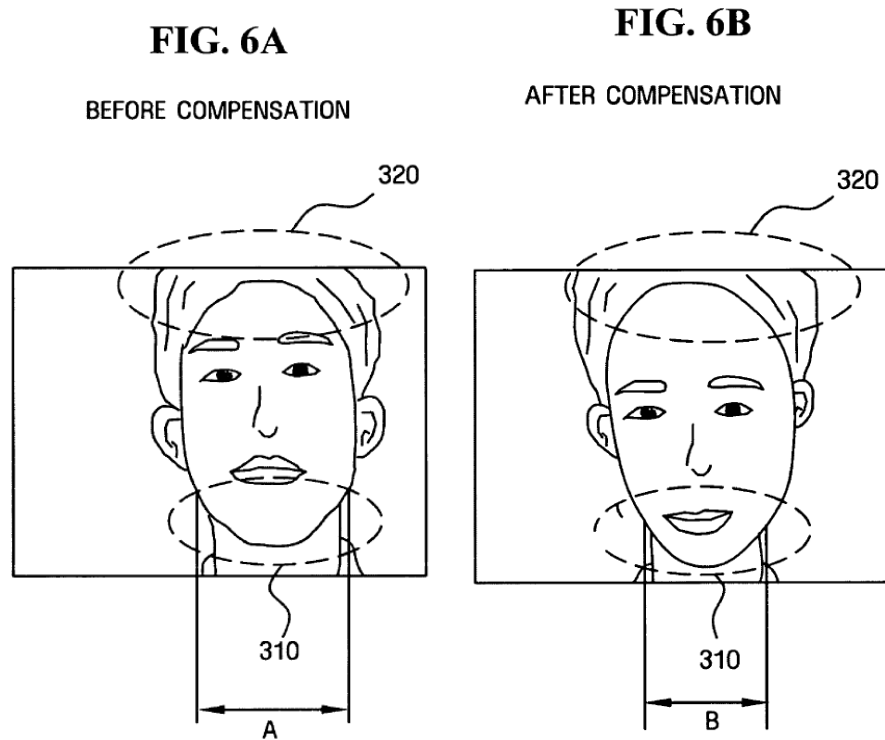
[T]he camera attached to the mobile communication device is mostly located below the user's face to capture the face of the user. In this case, the image of the user's face in three-dimensions is distorted in such a manner that user's chin appears to be larger than it actually is and user's forehead appears to be more narrow than it actually is. This phenomenon is called perspective. This distorted facial image is generally unnatural to users and may cause psychological rejection, which may delay the widespread use of video photography devices.

Id. ¶ 6.

Park addresses this in connection with an apparatus that includes an image capturing unit that captures an image of an object, along with a compensation unit. Ex. 1011 ¶ 36. In an embodiment, “the object is a person.” *Id.* ¶ 38. Additionally, “[t]he image capturing unit . . . may be . . . a camera mounted in [a] mobile communication device.” *Id.* ¶ 39.

The image capturing unit can modify a distorted image, as discussed in connection with Figures 6A and 6B, which are reproduced below.

Ex. 1011 ¶ 51.



In Figures 6A and 6B, Park shows “a captured image and a compensated image according to an embodiment.” *Id.* ¶ 23. In comparison to the captured image in Figure 6A, Figure 6B’s compensated image shows a smaller chin and a larger forehead:

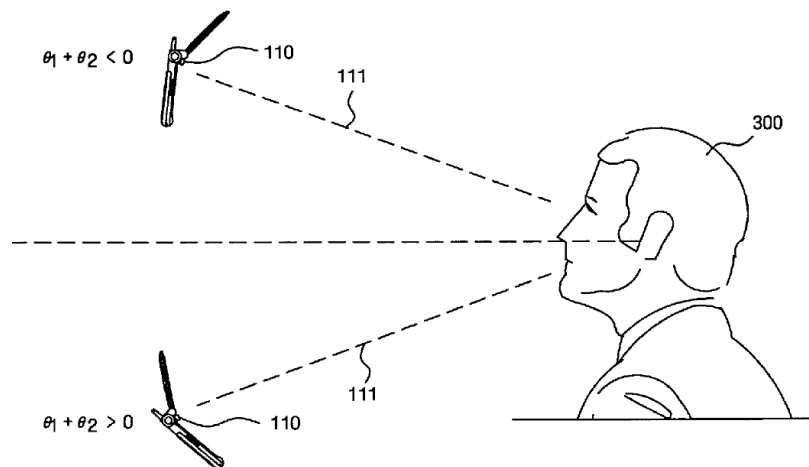
if the image capturing unit 110 that is located below the user’s face has captured the user’s facial image, as illustrated in [Figure] 6A, the captured image may be a distorted image in which the chin part 310 appears to be emphasized and the forehead part 320 appears to be narrowed. Accordingly, the compensation unit 140 performs perspective compensation on the image as illustrated in [Figure] 6A to provide a compensated image as illustrated in [Figure] 6B. In the compensated image of [Figure] 6B, the chin part 310 is reduced and the forehead part 320 is enlarged, in comparison to the distorted image of [Figure] 6A.

Id. ¶ 51.

Park's compensation unit "can perform the image compensation using a geometric transform technique and a perspective transform technique that is a kind of geometric transform technique." *Id.* ¶ 59. Park explains that "the perspective transform refers to typical matrix-based image transform algorithm." *Id.* ¶ 60. In an embodiment, the compensation involves matrix coefficients based on the tilt of the image capturing device, which has been determined with a tilt determining unit. *Id.* ¶ 61.

Park discusses determining tilt in connection with Figures 3–5. *Id.* ¶¶ 45–48. Figure 5 is reproduced below.

FIG. 5



Park's "[Figure] 5 is a view illustrating a mobile communication device that captures images of an object according to an embodiment." *Id.* ¶ 22. Using a tilt sensor, a tilt determining unit, and angle values Θ_1 and Θ_2 , the compensation unit ascertains whether the image capturing unit is above or below the object:

The compensation unit 140 determines whether the image capturing unit 110 is located over (i.e. above) the object or below the object through " $\Theta_1 + \Theta_2$ " that is the tilt calculated by the tilt determining unit 130. For example, if " $\Theta_1 + \Theta_2$ " is "0" on the

assumption that the angle of the ground is “0”, it is determined that the optical axis of the image capturing unit 110 is parallel to the ground 220. When the tilt sensing unit 120 is installed parallel to (i.e., in front of the optical axis of the image capturing unit 110, the tilt sensed by the tilt sensing unit 120 may be considered to be the tilt of the ground reference camera. Accordingly, as illustrated in [Figure] 5, it is determined that if the calculated tilt “ $\Theta_1 + \Theta_2$ ” has a negative value, the image capturing unit 110 is located over the object 300, while if the calculated tilt “ $\Theta_1 + \Theta_2$ ” has a positive value, the image capturing unit 110 is located below the object 300.

Id. ¶ 48.

3. Discussion

Petitioner argues that each limitation of independent claim 1 and each of dependent claims 2–6 and 10–12 was rendered obvious by Rosenberg and Park. Pet. 56–73. According to Petitioner, it would have been obvious to modify Rosenberg’s system of processing and displaying user images to use Park’s image compensation. *Id.* at 52–56. Petitioner suggests that the resulting combination would have included all limitations of claims 1–6 and 10–12 of the ’110 patent. *Id.* at 56–73.

Patent Owner disputes Petitioner’s obviousness contentions on multiple bases. Prelim. Resp. 14–18. Patent Owner suggests that Rosenberg and Park are not analogous art to one another, disputing Petitioner’s assertion that Rosenberg and Park are in the same field of endeavor. *Id.* at 14–15. Patent Owner also argues that Petitioner does not show motivation to combine Rosenberg and Park. *Id.* at 15–17. Patent Owner further argues that, “[e]ven assuming that there was motivation to combine Rosenberg and Park, which there is not, this combination would not render obvious any of Claims 1-6 and 10-12 at least because it would fail to meet Limitation 1(f).” *Id.* at 17.

Based on all of the parties' arguments and evidence, Petitioner demonstrates a reasonable likelihood of establishing that claim 1 of the '110 patent would have been obvious over Rosenberg and Park. Pet. 18–19, 52–73, Prelim. Resp. 6–8, 14–18. In the following sections, we discuss in detail the parties' current disputes regarding Petitioner's position that claim 1 would have been obvious over Rosenberg and Park.

a) Whether Rosenberg and Park are Analogous to One Another/in the Same Field of Endeavor

Petitioner contends that “Rosenberg, Park, and the '110 Patent are analogous because they are in the same field of endeavor.” Pet. 52 (citing Ex. 1003 ¶ 242). Petitioner states that “Rosenberg . . . describes adapting a flat panel display with a camera to mimic a mirror when a camera is centered horizontally across a display and aimed slightly downward.” *Id.* at 53 (citing Ex. 1006 ¶¶ 6, 77; Figs. 3, 5; Ex. 1003 ¶ 244). Petitioner further states that “Park concerns transforming images, such as images captured by a tilted camera positioned above the display and user.” *Id.* at 54 (citing Ex. 1011 ¶ 10).

Patent Owner counters that Rosenberg and Park are not in the same field of endeavor. Prelim. Resp. 14–15. Patent Owner argues that “Park does not discuss mirrors at all, let alone emulating a traditional mirror, and a [person of ordinary skill in the art] would not understand an ‘image capturing apparatus’ to be in the same field of endeavor as a ‘digital mirror system.’” *Id.* at 15.

At this stage, Patent Owner's suggestion that Rosenberg and Park are not analogous to one another based on the assertion that they are not in the same field of endeavor is unavailing for multiple reasons. First, when more than one prior art reference is used as the basis of an obviousness assertion,

it is not required that the references be analogous art to each other. *See Sanofi-Aventis Deutschland GmbH v. Mylan Pharms. Inc.*, 66 F.4th 1373, 1377 (Fed. Cir. 2023). “In evaluating whether a reference is analogous, [the Federal Circuit] has consistently held that a patent challenger must compare the reference to the challenged patent.” *Id.* at 1377.

Second, weighing the parties’ arguments and evidence, Petitioner’s evidence demonstrates a reasonable likelihood of establishing that Rosenberg and Park are in the same field of endeavor as the ’110 patent. Pet. 52–54; Ex. 1003 ¶¶ 242, 244–246; Prelim. Resp. 14–15. As Dr. Karam testifies, both Rosenberg and Park discuss capturing, processing, and displaying images of a person. Ex. 1003 ¶¶ 242, 244–246. For purposes of demonstrating a reasonable likelihood of prevailing, this evidence sufficiently supports Petitioner’s assertion that Rosenberg and Park are in the same field of endeavor as the ’110 patent. At this stage, we do not agree with Patent Owner’s suggestion that Rosenberg and Park have disparate fields of endeavor limited narrowly to the embodiments they discuss as examples. *See, e.g., Netflix, Inc. v. DivX, LLC*, 80 F.4th 1352, 1358–1359 (Fed. Cir. 2023) (“The field of endeavor is ‘not limited to the specific point of novelty, the narrowest possible conception of the field, or the particular focus within a given field.’”) (quoting *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1001 (Fed. Cir. 2016)).

b) Motivation

According to Petitioner, “[a person of ordinary skill in the art] would have found it obvious to combine Rosenberg and Park.” Pet. 52. Asserting that “Rosenberg recognizes that having a camera mounted above a screen is ‘non-ideal because it provides the user with. . . a somewhat unnatural

perspective,”” Petitioner asserts that Park supplies a “solution, which compensates ‘a perspective distortion of the facial image that is not desired by the user.’” *Id.* at 54 (quoting Ex. 1006 ¶ 27; Ex. 1011 ¶ 50). Observing that Park discloses performing image compensation “when the image capturing unit is ‘above or below the object,’” Petitioner asserts that Park’s approach covers Rosenberg’s “use case.” *Id.* (quoting Ex. 1011, cl. 44).

According to Petitioner, “[a person of ordinary skill in the art] would have been motivated to implement Park’s image compensation into Rosenberg to correct image distortions and provide a more realistic mirror image.” Pet. 54. Petitioner contends this would have provided certain benefits. *Id.* at 54–55. For example, Petitioner asserts that using Park’s digital approach would have reduced the cost and complexity associated with Rosenberg’s system. *Id.* at 54. Additionally, Petitioner argues that “[e]ven with [Rosenberg’s] behind-screen camera, the camera may not match each user’s eye-level, motivating a [person of ordinary skill in the art] to, as suggested in Park, use software to correct distortions from mismatched eye-levels.” *Id.* at 55. Petitioner contends that a person of ordinary skill in the art would have had the skill to readily implement Park’s approach in Rosenberg’s system, which Petitioner contends would “improve[] similar devices in the same way” and “would have had known, predictable benefits.” *Id.*

Patent Owner argues that “assuming, that Rosenberg and Park are in the same field of endeavor, that alone is not sufficient for motivation to combine.” Prelim. Resp. 15. Patent Owner contends that a person of ordinary skill in the art would not have been motivated to use Park’s digital approach to modify Rosenberg’s system “because the invention disclosed by

the Rosenberg reference *is* the optical components and specialized displays.” *Id.* at 16. “In fact, [a person of ordinary skill in the art] would regard Rosenberg’s emphasis on a complex physical placement of the camera . . . as actually teaching away from a digital transformation solution for perspective changes,” Patent Owner argues. *Id.* (citing Ex. 1006 ¶¶ 75–76). Patent Owner adds that Park’s disclosures would have little use in Rosenberg’s system:

There especially would not have been motivation to combine Rosenberg’s virtual mirror with the software-based image compensation solution of Park with respect to the subject matter for Limitation 1(f) because Park is directed to the distortion of user gaze based on the vertical tilt of a mobile phone camera. [Ex. 1011, ¶¶ 0006-0007, 0009]. This would have very limited applicability to a virtual mirror system where the user may not be directly in front of the camera and transformations are needed to change the apparent angle of the camera relative to the user.

Id. at 17. According to Patent Owner, Park relates to “the particular issue of user gaze due to the tilt of a mobile phone,” not to “changing the apparent perspective of the image captured by the camera.” *Id.* at 15–16.

Weighing the parties’ arguments and evidence, Petitioner provides sufficient rational underpinning at this stage for the position that a person of ordinary skill in the art would have been motivated to modify Rosenberg with Park’s image compensation. Pet. 52–55; Prelim. Resp. 14–17.

Contrary to Patent Owner’s contention, Petitioner sufficiently supports its position that Park discloses compensating for distorted perspective related to camera angle. Pet. 19, 54; Ex. 1003 ¶¶ 117–122, 245–247. Additionally, Petitioner provides persuasive evidence that a person of ordinary skill in the art would have recognized Park’s approach as an obvious, beneficial way to address Rosenberg’s concern that images captured from above supply an

unnatural perspective. Pet. 54–56; Ex. 1003 ¶¶ 247–249. Indeed, we have considered Patent Owner’s arguments, but we find Petitioner’s arguments and supporting evidence more persuasive at this stage.

Instead, Patent Owner suggests that a person of ordinary skill in the art would have eschewed such benefits because Rosenberg discloses a hardware-based approach to the perspective problem. Prelim. Resp. 16. At this stage, we do not agree with Patent Owner that Rosenberg teaches away from Park’s approach, as Patent Owner does not cite persuasive evidence that Rosenberg’s disclosure of a hardware-based approach in any way “criticize[s], discredit[s], or otherwise discourage[s]” using Park’s technology. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Nor does Patent Owner identify any other persuasive reason that a person of ordinary skill in the art would have adhered rigidly to Rosenberg’s hardware-based approach in spite of Petitioner’s evidence of recognized benefits of Park’s software-based approach. *See, e.g.*, Prelim. Resp. 16–17; Pet. 54–55; Ex. 1003 ¶¶ 247–249.

c) Limitation 1[f]

Petitioner asserts that Rosenberg-Park renders obvious limitation 1[f]. Pet. 64 (citing Ex. 1003 ¶¶ 269–276). Addressing limitation 1[f]’s mapping transformation, Petitioner argues the following:

When Rosenberg is modified with Park’s transformation mapping (*see supra*), during the tracking mode, the processor would utilize the angle of the images that are captured by the camera of Rosenberg and apply parametric input for a mapping transformation that changes imaging perspective of the images as taught by Park.

Id. at 64–65 (citing Ex. 1003 ¶¶ 272–276).

Patent Owner counters that Rosenberg and Park fail to disclose limitation 1[f]. Prelim. Resp. 17. Patent Owner argues that Rosenberg accomplishes a desired perspective using “complex, physical placement of one or more cameras.” *Id.* (citing Ex. 1006 ¶¶ 75–76). And, according to Patent Owner, “Park’s disclosure of image ‘compensation’ does not change the apparent perspective of the image as required by limitation 1(f), but rather compensates for the tilt of the image capturing device.” *Id.* at 18 (citing Ex. 1011 ¶¶ 41, 60–61).

Petitioner’s evidence shows sufficiently that the prior art teaches limitation 1[f], including “chang[ing] imaging perspective of the images captured by the camera.” Pet. 58–67; Ex. 1003 ¶¶ 253–257, 261–276. For example, Dr. Karam testifies that “[w]hen Rosenberg is modified with Park’s transformation mapping (*see supra* §XII.B.d), the processor would utilize the angle of the images that are captured by the camera of Rosenberg and apply parametric input for a mapping transformation that changes imaging perspective of the images as taught by Park.” Ex. 1003 ¶ 272. In § XII.B.d of her declaration, noting that “Park discloses modifying images having ‘a *perspective distortion of the facial image* that is not desired by the user,’” Dr. Karam testifies that “Park further teaches that to adjust the user’s perspective, ‘image compensation using a geometric transform technique and a *perspective* transform technique’ may be used.” Ex. 1003 ¶¶ 254–255 (quoting Ex. 1011 ¶¶ 50, 59) (emphases added). Dr. Karam also testifies that “prior to implementing the transformation (i.e., compensation) disclosed in Park, the user’s image is captured at a point of view below the user’s face and contains perspective distortion,” whereas “[a]fter the transformation is applied, and the distortion is compensated, the user’s image appears to be

captured at a point of view straight ahead of the user's face.” Ex. 1003 ¶ 263 (citing Ex. 1011 ¶¶ 50–51, Figs. 6A, 6B, 14–15). At this stage, we find this evidence sufficiently supports Petitioner's position that Park discloses changing imaging perspective.

At this stage, we find unpersuasive Patent Owner's rebuttal that Park adjusts for the tilt of the device capturing the image. Prelim. Resp. 18. Petitioner presents sufficient evidence and arguments that Park teaches compensating for the device's tilt in concert with changing imaging perspective, rather than compensating for tilt without changing imaging perspective. Pet. 58–67; Ex. 1003 ¶¶ 253–257, 263–276.

D. PETITIONER'S OTHER OBVIOUSNESS CHALLENGES

As noted above, Petitioner also challenges claims 1–18 as allegedly obvious over other combinations of prior art, including Haan, Francois, Geisner, Lizee, Rosenberg, and Park. Pet. 8, 22–52, 73–107. In responding to these challenges, Patent Owner raises a number of fact-intensive questions that are best resolved based on a fuller record developed during trial. Prelim. Resp. 11–14, 18–27. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1354, 1359–60; *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018); 37 C.F.R. § 42.108(a) (“When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”).

IV. CONCLUSION

For the foregoing reasons, we have determined that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition. We therefore institute trial as to all challenged claims on all grounds stated in the Petition.

V. ORDER

In consideration of the foregoing, it is:

ORDERED that *inter partes* review of claims 1–18 of the '110 patent is instituted on all grounds in the Petition;

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this decision.

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