

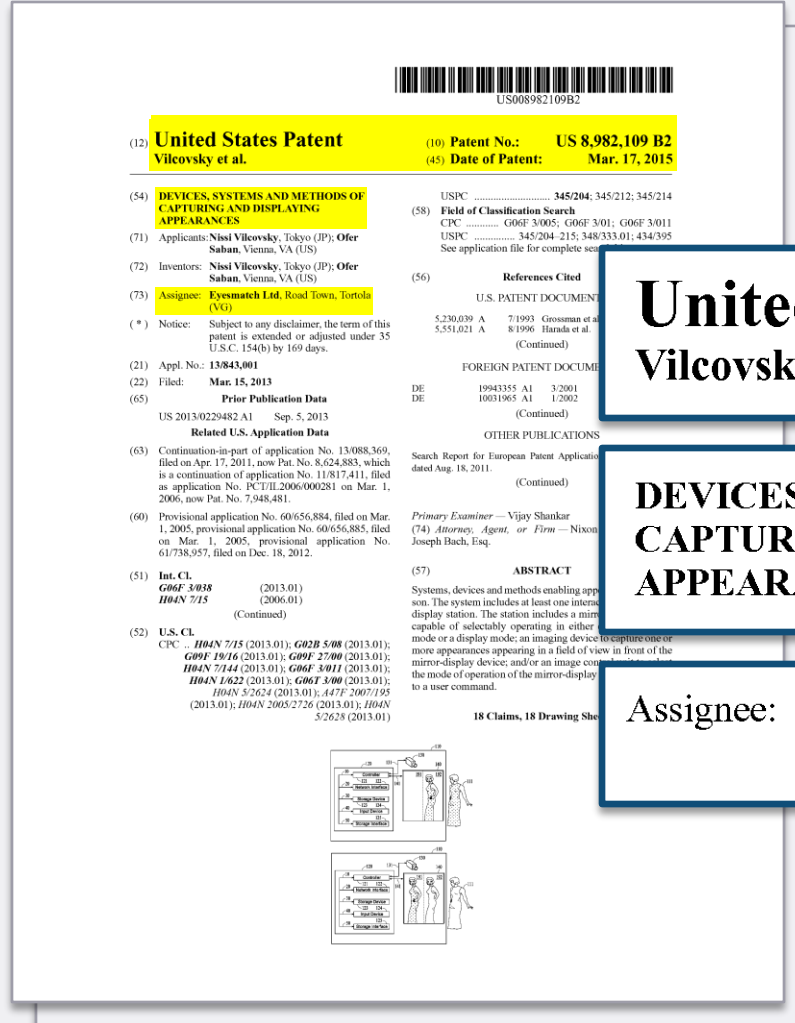
Patent Owner EyesMatch: Oral Argument

September 17, 2025

Samsung Electronics Co. Ltd., et al. v. EyesMatch Ltd., Case No. IPR2024-00856

CHALLENGED PATENT

The 109 Patent



United States Patent
Vilcovsky et al.

(10) **Patent No.:** **US 8,982,109 B2**
(45) **Date of Patent:** **Mar. 17, 2015**

DEVICES, SYSTEMS AND METHODS OF
CAPTURING AND DISPLAYING
APPEARANCES

Assignee: **Eyesmatch Ltd,** Road Town, Tortola
(VG)

ASSERTED GROUNDS

109 Patent Asserted Grounds

Ground	References	Claim
1	Rosenberg and Nakazawa	1-6, 8, and 17
2	Rosenberg, Nakazawa, and Hatanaka	1-6, 8, 11, and 17
3	Rosenberg, Nakazawa, and Tripathi	1-6, 8, and 17
4	Rosenberg, Nakazawa, Tripathi, and Hatanaka	11
5-7	Rosenberg, Nakazawa, and Iwai Rosenberg, Nakazawa, Hatanaka, and Iwai Rosenberg, Nakazawa, Tripathi, and Iwai	7
8-10	Rosenberg, Nakazawa, and Kubota Rosenberg, Nakazawa, Hatanaka, and Kubota Rosenberg, Nakazawa, Tripathi and Kubota	9

109 Patent Asserted Grounds Continued

Ground	References	Claim
11-13	Rosenberg, Nakazawa, and Cho Rosenberg, Nakazawa, Hatanaka, and Cho Rosenberg, Nakazawa, Tripathi, and Cho	10
14-16	Rosenberg, Nakazawa, and Park Rosenberg, Nakazawa, Hatanaka, and Park Rosenberg, Nakazawa, Tripathi, and Park	12
17-19	Rosenberg, Nakazawa, and Kuranov Rosenberg, Nakazawa, Hatanaka, and Kuranov Rosenberg, Nakazawa, Tripathi, and Kuranov	13-15
20-22	Rosenberg, Nakazawa, and Chang Rosenberg, Nakazawa, Hatanaka, and Chang Rosenberg, Nakazawa, Tripathi, and Chang	16
23-25	Rosenberg, Nakazawa, and Lizée Rosenberg, Nakazawa, Hatanaka, and Lizée Rosenberg, Nakazawa, Tripathi, and Lizée	18

CHALLENGED INDEPENDENT CLAIM

U.S. Patent No. 8,982,109 Challenged Independent Claim 1

1 Preamble. A method for operating a system having a monitor, a camera, and a processor, so as to display a mirror-mimicking image on the monitor, by performing non-ordered steps comprising:

- 1a. obtaining a digital image from a camera;
- 1b. flipping the image about a vertical axis so as to reverse right and left sides of the image;
- 1c. applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror;
- 1d. resizing the image to reduce variations caused by changes in object's distance to the camera;
- 1e. displaying the image on the monitor after performing the flipping, transformation mapping, and resizing;
- 1f. wherein the non-ordered steps are performed on a series of images of a live video feed from the camera;
- 1g. determining distance to a user appearing in the live video feed;
- 1h. and, varying rate at which the non-ordered steps are performed on the series of images according to the distance.

U.S. Patent No. 8,982,109 Challenged Independent Claim 1

1 Preamble. A method for operating a system having a monitor, a camera, and a processor, so as to display a mirror-mimicking image on the monitor, by performing non-ordered steps comprising:

1a. obtaining a digital image from a camera;

1b. flipping the image about a vertical axis so as to reverse right and left sides of the image;

1c. applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror;

1d. resizing the image to reduce variations caused by changes in object's distance to the camera;

1e. displaying the image on the monitor after performing the flipping, transformation mapping, and resizing;

1f. wherein the non-ordered steps are performed on a series of images of a live video feed from the camera;

1g. determining distance to a user appearing in the live video feed;

1h. and, **varying rate at which the non-ordered steps are performed on the series of images according to the distance.**

- Whether the Board should adopt Petitioners' district court construction of **“appears to mimic a mirror”**
- Whether the Asserted Grounds disclose or render obvious limitation 1(c): **“applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror”**
- Whether the Asserted Grounds disclose or render obvious limitation 1(h): **“varying rate at which the non-ordered steps are performed on the series of images according to the distance.”**

- Whether the Board should adopt Petitioners' district court construction of **“appears to mimic a mirror”**
- Whether the Asserted Grounds disclose or render obvious limitation 1(c): “applying a transformation mapping to the image to modify the image such that it **appears to mimic a reflection of a mirror**”
- Whether the Asserted Grounds disclose or render obvious limitation 1(h): “**varying rate at which the non-ordered steps are performed on the series of images according to the distance.**”

CLAIM CONSTRUCTION

Petitioners' IPR Claim Construction Position

“it appears to mimic a reflection of a mirror”

1013, 1017 (Fed. Cir. 2017). No terms require construction because the claims encompass the prior-art mappings under any reasonable construction consistent with *Phillips*. 37 C.F.R. § 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed.

Petitioners' District Court Claim Construction Position

“it appears to mimic a reflection of a mirror”

An image where the user sees their reversed reflection appearing at approximately double the distance from the camera and the reflection maintains approximately the same size regardless of the user movement.

EyesMatch v. Samsung, Samsung Resp. Claim Construction Br. (Ex. 2009) at 12 (cited: POR (Paper No. 22) at 15).

District Court Claim Construction Order

“it appears to mimic a reflection of a mirror”

The Court accordingly hereby construes “it appears to mimic a reflection of a mirror” to mean **“an image where the user sees their reversed reflection appearing at roughly double the distance from the camera and the reflection maintains roughly the same size regardless of the user movement.”**

EyesMatch v. Samsung, Claim Construction Order (Ex. 2008) at 19 (cited: POR (Paper No. 22) at 33).

Petitioners' District Court Construction Should Be Adopted

Petitioners sought a narrow construction in district court.

“it appears to mimic a reflection of a mirror”

An image where the user sees their reversed reflection appearing at approximately double the distance from the camera and the reflection maintains approximately the same size regardless of user movement.

EyesMatch v. Samsung, Samsung's Responsive Claim Construction Br. (Ex. 2009) at 12 (cited: POR (Paper No. 22) at 15).

Petitioners' District Court Construction Should Be Adopted

Petitioners sought a narrow construction in district court.

“When a user looks at himself in the mirror, what he actually sees is the reflection of himself as if he was standing at a distance that is double the distance from him to the mirror. This is illustrated in FIG. 5A, wherein the user standing at distance $D1$ sees himself at a distance equal to twice $D1$. Similarly, as shown in FIG. 5B, a user standing at distance $D2$ will see himself at a distance $2 \times D2$.”

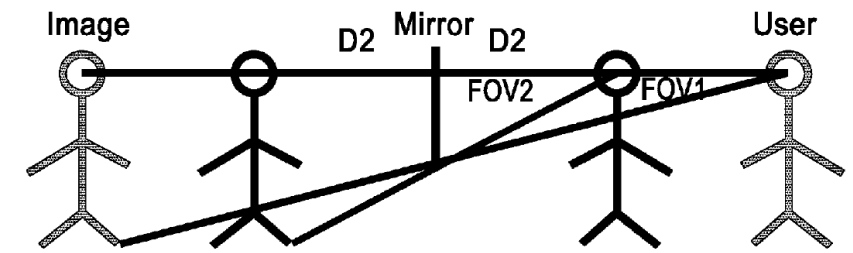


FIG. 5B

109 Patent (Ex. 1001) at 2:4-10, Figs. 5A, 5B (cited: Samsung's Resp. Claim Construction Brief (Ex. 2009) at 16 and Petition (Paper No. 1) at 26) and Karam Decl. (Ex. 1004), ¶ 42 (cited: Petition (Paper No. 1) at 7)).

Petitioners' District Court Construction Should Be Adopted

Petitioners sought a narrow construction in district court.

“Consequently, as illustrated in FIG. 5B, **when the user approaches the mirror**, the FOV angle increases, which is why **he continues to see the same size reflection** ($FOV1 < FOV2$), so that the user actually sees himself roughly at the same size, but closer.”

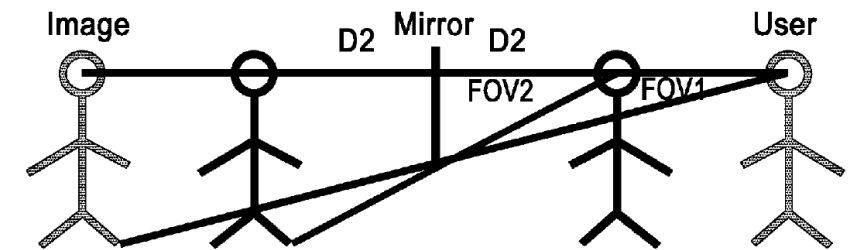


FIG. 5B

109 Patent (Ex. 1001) at 2:19-23, Figs. 5A, 5B (cited: Samsung's Resp. Claim Construction Brief (Ex. 2009) at 16) and Petition (Paper No. 1) at 26) and Karam Decl. (Ex. 1004), ¶ 42 (cited: Petition (Paper No. 1) at 7)).

Petitioners' District Court Construction Should Be Adopted

Petitioners sought a narrow construction in district court.

The '109 Patent emphasizes that prior art “techniques are not convincing and are not yet accepted as a reliable image of the individual as if he was looking at himself in a conventional mirror.” '109 Patent at 1:65-2:1. . . . First, the '109 Patent explains that conventional mirror images are reversed. *Id.* at 14:40-41. However, the '109 Patent makes clear that mimicking a mirror's reflection requires **more** than simply displaying a reversed image/video of a user. . . .

Second, the '109 Patent describes that “when a user looks at himself in the mirror, what he actually sees is the reflection of himself as if he was standing at a distance that is **double the distance** from him to the mirror.” *Id.* at 2:4-6; *see also id.* at Figs. 5A and 5B, illustrating a user standing at a distance from a mirror (“D1” in Fig. 5A and “D2” in Fig. 5B) and seeing himself (i.e., his reflected “image”) at twice the distance from the mirror (2xD1 or 2xD2, respectively). Third, when describing conventional mirrors, the '109 Patent provides that “the angle of the user's Field of View (FOV) changes when the user changes the distance, e.g., gets closer, to the mirror.” *Id.* at 2:10-12. “Consequently, as illustrated in FIG. 5B, when the user approaches [a conventional] mirror . . . he continues to see the **same size reflection . . . so that the user actually sees himself roughly at the same size**, but closer.” *Id.* at 2:19-23; *see also* 14:25-5

Petitioners' District Court Construction Should Be Adopted

Petitioners never contend the district court's construction was wrong.

- “The Board need not construe ‘mirror mimicking’ since the prior art expressly discloses mimicking a mirror.”

Petitioners' Reply (Paper No. 26) at 6.

- “The Board is not bound by a magistrate judge's construction.”

Petitioners' Reply (Paper No. 26) at 7.

- “Petitioners' IPR position is not inconsistent with Samsung's construction for ‘mirror mimicking’ in district court.”

Petitioners' Reply (Paper No. 26) at 5.

- “But Petitioners continue to believe that no construction is necessary to resolve the disputes before the Board.”

Petitioners' Opp. to Mtn. to Strike (Paper No. 39) at 8.

Petitioners' District Court Construction Should Be Adopted

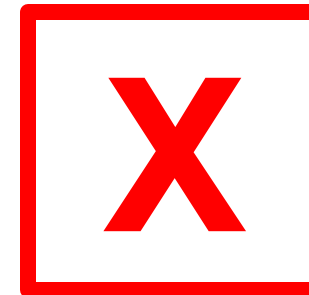
Of Course Petitioners' Positions Are Inconsistent, and A Construction Is Necessary.

- In “traditional mirror emulation mode, the digital mirror is operative to replicate the performance of a standard household mirror, providing the user with a left-right reversed frontal image of himself or herself when standing before the display.” Rosenberg (Ex. 1005), ¶ [0027]

Petitioner's IPR Position (No Construction)



Petitioner's District Court Position (Double Distance, Same Size Requirement)



(cited: Petition (Paper No. 1) at 14).

Petitioners' District Court Construction Should Be Adopted

Petitioners have failed to explain their inconsistent positions.

“Keeping in mind that Petitioner has the burden to show a reasonable likelihood of prevailing in showing that at least one claim is unpatentable, **it is incumbent upon Petitioner to address substantively the District Court’s claim construction of a limitation when construction of that limitation is likely to be a focal point of the *inter partes* review proceeding.** By failing to reconcile its proffered claim construction here with its very different construction proffered in District Court—which the District Court agreed with—Petitioner fails to satisfy this burden.”

OrthoPediatrics Corp. v. K2M, Inc., No. IPR2018-01548, Paper 9 at 11 (P.T.A.B. Mar. 1, 2019) (cited: POR (Paper 22) at 18).

Petitioners' District Court Construction Should Be Adopted

The *Markman* standard was adopted for IPRs to end gamesmanship and provide consistency

“By maintaining consistency among the various proceedings, the integrity, predictability, and reliability of the patent system is thus enhanced.”

Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,345 (Oct. 11, 2018) (Cited: POR (Paper 22) at 18).

If we were to adopt Petitioner's claim construction as presented in the Petition, and if the district court were to adopt Petitioner's claim constructions as proposed there, the subsequent decisions issued in reliance on these inconsistent claim constructions may lack “uniformity” between us and the district court and may undermine the “predictability” of the '296 patent's claim scope and the “integrity of the patent system” overall. See Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. at 51,342. Petitioner has not provided us with any arguments as to why such problems are not present here, much less provided any reason behind its inconsistent claim constructions in general.

Kiosoft Techs., LLC v. PayRange, Inc., No. IPR2021-00086, Paper 12 at 16 (P.T.A.B. Mar. 22, 2021) (cited: POR (Paper 22) at 18).

- Whether the Board should adopt Petitioners' district court construction of **“appears to mimic a mirror”**
- Whether the Asserted Grounds disclose or render obvious limitation 1(c): **“applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror”**
- Whether the Asserted Grounds disclose or render obvious limitation 1(h): **“varying rate at which the non-ordered steps are performed on the series of images according to the distance.”**

ASSERTED GROUNDS DO NOT DISCLOSE OR RENDER OBVIOUS LIMITATION 1(C)

For all grounds, Petitioners rely only on the combination of Rosenberg and Nakazawa to contend that limitation 1(c) (“it appears to mimic a reflection of a mirror”) is disclosed or obvious

- d. 1[c]: “*applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror;*”

Rosenberg and Nakazawa render obvious this limitation. Decl. ¶¶124-129.

Rosenberg discloses flipping video images about a vertical axis and scaling them so the user has the impression of viewing a mirror (“*mimic a reflection of a mirror*”). Sections V.A.1, V.A.4.c, V.A.4.e; *Rosenberg*, [0003], [0026]-[0027], [0035], [0041], [0061], [0068], [0077], [0083]. A POSITA would have understood *Rosenberg*’s flipping and scaling are “*transformation mapping,*” for each maps the position of each pixel to a position of a corresponding pixel of a modified

1. Even If the Board Adopts the Magistrate Judge’s Construction, *Rosenberg and Nakazawa* Render Obvious “Mirror Mimicking”⁶

The magistrate judge construed “mirror mimicking” to mean “an image where the user sees their reversed reflection appearing at roughly double the distance from the camera and the reflection maintains roughly the same size regardless of the user movement.” Ex. 2008, 15-19. Even if the Board adopts this construction, the Petition and evidence demonstrate *Rosenberg and Nakazawa* render obvious this limitation.

Petitioners Rely Exclusively on *Rosenberg/Nakazawa* For Limitation 1(c)

Ground 2

B. Ground 2: *Rosenberg, Nakazawa, and Hatanaka* Render Obvious Claims 1-6, 8, 11, and 17

1. Independent Claim 1

a. 1[pre]-1[g]

Rosenberg and Nakazawa render obvious these limitations. Sections

V.A.4.a-V.A.4.h; Decl. ¶200.

* Section V.A is Ground 1

Ground 3

C. Ground 3: *Rosenberg, Nakazawa, and Tripathi* Render Obvious Claims 1-6, 8, and 17

1. Independent Claim 1

a. 1[pre]-1[g]

Rosenberg and Nakazawa render obvious these limitations. Sections

V.A.4.a-V.A.4.h; Decl. ¶220.

* Section V.A is Ground 1

Petitioners Rely Exclusively on *Rosenberg/Nakazawa* For Limitation 1(c)

Ground 4

D. Ground 4: *Rosenberg, Nakazawa, Tripathi, and Hatanaka* Render Obvious Claim 11

1. Claim 11

a. 11[pre]: “*The method of claim 1, further comprising:*”

Rosenberg, Nakazawa, and Tripathi render obvious claim 1. Section V.C.1;

Decl. ¶226.

* Section V.C.1. is Ground 3

Grounds 5-7

3. Claim 7

a. 7[pre]: “*The method of claim 1, further comprising the steps:*”

Rosenberg and Nakazawa (or *Rosenberg, Nakazawa, and Hatanaka*, or *Rosenberg, Nakazawa, and Tripathi*) render obvious claim 1. Sections V.A.4, V.B.1, V.C.1; Decl. ¶235.

* Sections V.A.4 (Ground 1), V.B.1 (Ground 2), V.C.1. (Ground 3)

Petitioners Rely Exclusively on *Rosenberg/Nakazawa* For Limitation 1(c)

Grounds 8-10

F. Grounds 8-10 Demonstrate Claim 9 Is Unpatentable

1. Claim 9

- a. *“The method of claim 1, further comprising changing illumination intensity of individual or groups of pixels of the monitor, so as to enhance shading or illumination in the image.”*

Rosenberg and Nakazawa (or Rosenberg, Nakazawa, and Hatanaka, or

Rosenberg, Nakazawa, and Tripathi) and Kubota render obvious claim 9.

Decl. ¶¶247-255.

Grounds 11-13

G. Grounds 11-13 Demonstrate Claim 10 Is Unpatentable

1. Claim 10

- a. *“The method of claim 1, further comprising applying at least one of a barrel-effect transformation and a fish-eye transformation.”*

Rosenberg and Nakazawa (or Rosenberg, Nakazawa, and Hatanaka, or

Rosenberg, Nakazawa, and Tripathi) and Cho render obvious claim 10.

Decl. ¶¶256-260.

Petitioners Rely Exclusively on *Rosenberg/Nakazawa* For Limitation 1(c)

Grounds 14-16

H. Grounds 14-16 Demonstrate Claim 12 Is Unpatentable

1. Claim 12

- a. *“The method of claim 1, further comprising a step of pixel filling, wherein pixel image is extrapolated into empty pixels left after applying the transformation mapping.”*

Rosenberg and Nakazawa (or *Rosenberg, Nakazawa, and Hatanaka*, or *Rosenberg, Nakazawa, and Tripathi*) and *Park* render obvious claim 12.

Decl. ¶¶261-267.

Grounds 17-19

- d. 13[c]: *“applying a transformation mapping to the second image to modify the second image such that it appears to mimic a reflection of a mirror;”*
- e. 13[d]: *“resizing the second image to reduce variations caused by changes in object’s distance to the second camera;”*

Rosenberg alone, or in view of *Nakazawa*, renders obvious these limitations.

Decl. ¶¶272-276.

Petitioners Rely Exclusively on *Rosenberg/Nakazawa* For Limitation 1(c)

Grounds 20-22

- d. 16[c]: “*applying a transformation mapping to the second image to modify the second image such that it appears to mimic a reflection of a mirror;*”
- e. 16[d]: “*resizing the second image to reduce variations caused by changes in object’s distance to the second camera;*”

Rosenberg alone, or in view of *Nakazawa*, renders obvious these limitations.

Decl. ¶¶295-298.

Grounds 23-25

K. Grounds 23-25 Demonstrate Claim 18 Is Unpatentable

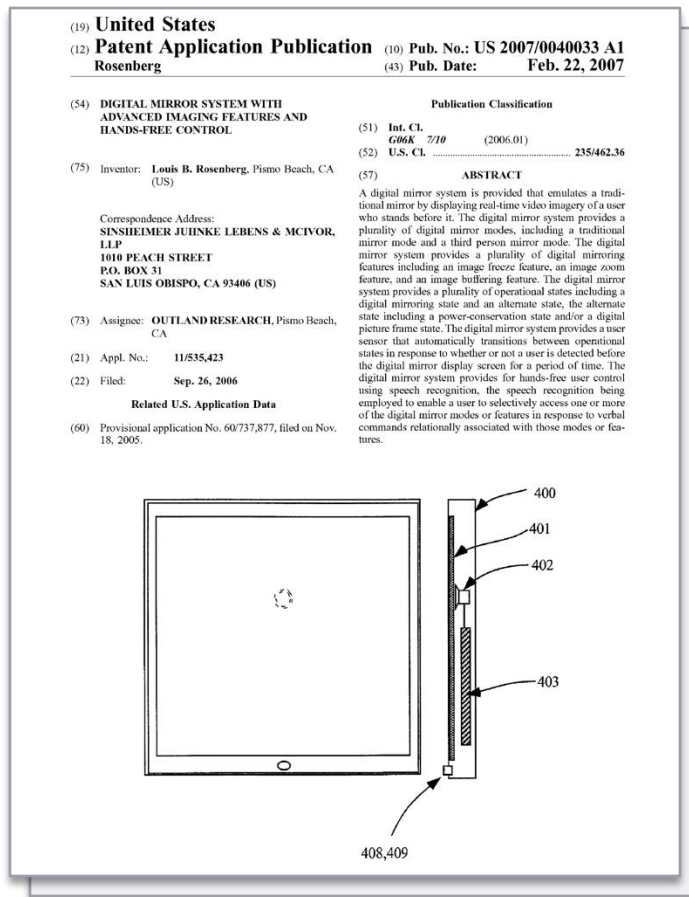
1. Claim 18

- a. “*The method of claim 1, further comprising calculating distance to a user appearing in the image by identifying user’s shoes and triangulating to the shoes.*”

Rosenberg and *Nakazawa* (or *Rosenberg*, *Nakazawa*, and *Hatanaka*, or *Rosenberg*, *Nakazawa*, and *Tripathi*) and *Lizee* render obvious claim 18.

Decl. ¶¶303-310.

Rosenberg's "traditional mirror" mimics a mirror by simply inverting a user's image.



- “The digital mirror system is adapted to provide real-time captured images that approximate what a user would see when viewing an ordinary mirror, with the addition of various other image processing features.” Rosenberg (Ex. 1005), ¶ [0006]
- In “traditional mirror emulation mode, the digital mirror is operative to replicate the performance of a standard household mirror, providing the user with a left-right reversed frontal image of himself or herself when standing before the display.” Rosenberg (Ex. 1005), ¶ [0027]
- “When in a traditional mirror emulation mode, the frozen image is a left-right inverted image of the user.” Rosenberg (Ex. 1005), ¶ [0039]
- “For example, a typical verbal command used to switch modes between the traditional mirror emulation mode and the third-person mirror mode is ‘flip’ because the user is flipping the image left-right about a vertical centerline.” Rosenberg (Ex. 1005), ¶ [0041]

Nakazawa is directed to gaze correction, not mimicking a mirror

JP 2007-6016 A 2007.1.11

(19) Japanese Patent Office (JP) (12) Patent Application Gazette (A) (11) Published Application No. 2007-6016 (P2007-6016A)

(43) Appl. Published: Jan. 11, 2007

(51) Int. Cl.		FI		Theme code (for ref.)	
H 04 N	5/232	(2006.01)	H 04 N	5/232	Z
G 06 T	1/00	(2006.01)	G 06 T	1/00	340A
G 06 T	3/00	(2006.01)	G 06 T	3/00	200
H 04 N	5/225	(2006.01)	H 04 N	5/225	B

Request for Examination: No. Number of Claims: 11 Ol. Total pages: 10

(21) Filed Appl. No.: Patent Appl. 2005-182222 (P2005-182222) (71) Applicant: Sharp Corporation
22-22 Nagaike-cho, Abeno-ku, Osaka-shi, Osaka, Japan

(74) Agent: 100112335 FUJIMOTO Eisuke, Patent Attorney

(74) Agent: 100101144 KANDA Masayoshi, Patent Attorney

(74) Agent: 100101694 MIYAO Akishige, Patent Attorney

(72) Inventor: NAKAZAWA, Naofumi
c/o Sharp Corporation
22-22 Nagaike-cho, Abeno-ku, Osaka-shi, Osaka, Japan

(22) Filed: Jun. 22, 2005

(54) [Title of the Invention] PHOTOGRAPHING DEVICE

(57) ABSTRACT (Amended)

[PROBLEM] To provide a photographing device capable of correcting an image so that the line of sight of a captured image and a displayed image match when a deviation in the orientation of the face occurs when photographing while checking the image due to separation of photographing means and displaying means.

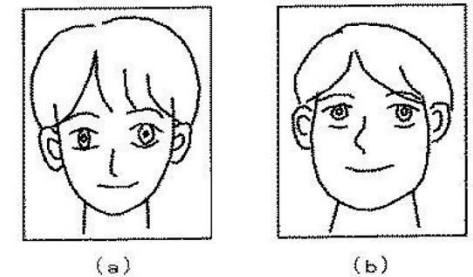
[RESOLUTION MEANS] An image correcting unit 102 corrects orientation of a face image according to a degree of magnification input by a user from an inputting unit 105. The user confirms the corrected image by displaying the image on a display unit 103. If the correction is sufficient, the degree of magnification is determined, and the degree of magnification is also registered in a memory unit 108. When displaying the corrected image, a message such as "corrected image" is displayed to notify the user that it is a corrected image, and the degree of magnification is also displayed.

[Selected Drawing] FIG. 1

- “[A]n object of the present invention is to provide a photographing device that is capable of image correction so that the line of sight of the captured image and the displayed image are aligned, even if the photographing means and the displaying means are separated.” Nakazawa (Ex. 1007), ¶ [0007]

(cited: Petition (Paper No. 1) at 11).

[FIG. 2]

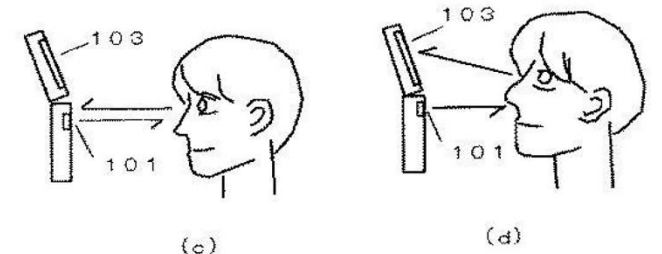


- “FIG. 2 is an explanatory diagram when a user photographs their own face using this photographing device.” Nakazawa (Ex. 1007), ¶ [0031]

(cited: Petition (Paper No. 1) at 13.

- “At most, a POSITA may consider Nakazawa as disclosing simple inversion of the image.” Forsyth Decl. (Ex. 2013), ¶ 444.

(cited: POR (Paper No. 22) at 5).



(cited: Petition (Paper No. 1) at 13).

Petition Does Not Show Or Even Address How *Rosenberg/Nakazawa* Discloses Double Distance, Same Size Requirement

- d. 1[c]: “*applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror;*”

Rosenberg and *Nakazawa* render obvious this limitation. Decl. ¶¶124-129.

Rosenberg discloses flipping video images about a vertical axis and scaling them so the user has the impression of viewing a mirror (“*mimic a reflection of a mirror*”). Sections V.A.1, V.A.4.c, V.A.4.e; *Rosenberg*, [0003], [0026]-[0027], [0035], [0041], [0061], [0068], [0077], [0083]. A POSITA would have understood *Rosenberg*’s flipping and scaling are “*transformation mapping*,” for each maps the position of each pixel to a position of a corresponding pixel of a modified

image. Decl. ¶125. Indeed, the ’109 Patent explains “*transformation mapping*” includes left-right flipping and scaling (’109 Patent, 22:1-13, 23:60-24:9, 24:51-53, 29:22-58). *Id.*

If the claims require additional transformations, this limitation would have been obvious over *Nakazawa*. Decl. ¶¶126-129. *Nakazawa* discloses correcting image distortion when the camera is above/below the display, and the user looks at the display during capture. *Nakazawa*, [0001]-[0003], [0008], [0032], [0034]. If a user looks at the display (not the camera) during capture (Figure 2(d)), a distorted image (Figure 2(b)) is captured. *Id.*, [0031]-[0032].

Petitioners' Expert Did Not Show How *Rosenberg*/*Nakazawa* Met The Double Distance, Same Size Requirement

124. In my opinion, *Rosenberg* in view of *Nakazawa* renders obvious this claim limitation.

125. *Rosenberg* discloses performing left-right inversion (flipping pixels along a vertical axis) and scaling the video images so the user is given the impression that he or she is standing before a traditional wall mirror, viewing a mirror image (“such that it appears to mimic a reflection of a mirror”). See, e.g., *Rosenberg* (Ex. 1005), [0003], [0026]-[0027], [0035], [0041], [0061], [0068], [0077], [0083]. A person of ordinary skill in the art would have understood that *Rosenberg*’s pixel flipping and image scaling are “transformation mapping,” as claimed, for these steps would have been performed by mapping the position of each image pixel to another position of a corresponding pixel of a modified image. Likewise, the ’109 Patent explains that the “transformation mapping” can include left-right flipping and scaling. ’109 Patent (Ex. 1001), 22:1-13, 23:60-24:9, 24:51-53, 29:22-58. The ’109 Patent further indicates that such transformation mapping “essentially reassigns new addresses to each pixel of the original image.” ’109 Patent (Ex. 1001), 29:28-30.

126. To the extent that the claim limitation requires additional transformations, however, this claim limitation would have been obvious in view of *Nakazawa*. *Nakazawa* discloses correcting distortion in an image when the camera capturing the image is located above or below a display, and the user looks at his or her image on the display during capture. See *Nakazawa* (Ex. 1007), Abstract, [0001]-[0003], [0008], [0032], [0034], Fig. 2. For example, as shown below, when a camera is located below a display, if the user looks at the camera during image capture (Figure 2(c)), an image like Figure 2(a) is captured; if the user looks at the display during capture (Figure 2(d)), then a distorted image like Figure 2(b) is captured *Nakazawa* (Ex. 1007), [0031]-[0032]. *Nakazawa* also discloses that this distortion occurs when a camera is above the display. *Nakazawa* (Ex. 1007), [0034].

Petition Must Include All Arguments for Unpatentability

Petitioners were required to present all their arguments for unpatentability in their Petitions.

“Petitioner may not submit new evidence or argument in reply that it could have presented earlier, e.g. to make out a prima facie case of unpatentability.”

“It is also improper for a reply to present new evidence (including new expert testimony) that could have been presented in a prior filing, for example, newly cited prior art references intended to ‘gap-fill’ by teaching a claim element that was not present in the prior art presented with the petition.”

Petitioners Have Failed to Explain Their Inconsistent Positions

function.” The Petition failed to do so. At a minimum, the Petition should have explained why the plain and ordinary meaning of the “component” terms should apply in this proceeding (why the inconsistent positions are warranted) or set forth an alternative means-plus-function claim construction. CTPG 45.

As a clarification, our rules do not necessarily prohibit petitioners from taking inconsistent claim construction positions before the Board and a district court. *See 10x Genomics, Inc. v. Bio-Rad Lab's, Inc.*, IPR2020-00086, Paper 8 at 18 (PTAB Apr. 27, 2020). However, here, where Petitioner has emphasized in district court that whether the “component” terms are means-plus-function limitations not only “will be most significant” but, “will be case . . . dispositive” and both parties previously provided the district court with competing means-plus-function claim constructions, we determine the Petition to be deficient under our rules.⁴

Cambridge Mobile Telematics, Inc. v. Sfara, Inc., No. IPR2024-00952, Paper 12 at 8, 8-9 (P.T.A.B. Dec, 13, 2024) (designated informative) (cited: Order re: Conduct of the Proceedings (Paper No. 31) at 3).

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Petition Asserted No Construction Required – Plain Meaning – for All Terms

1013, 1017 (Fed. Cir. 2017). No terms require construction because the claims encompass the prior-art mappings under any reasonable construction consistent with *Phillips*. 37 C.F.R. § 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed.

Dr. Karam's Analogy Underscores Petitioners' Failure of Proof

20 Maybe to give you more
21 clarification, if you say "office furniture,"
22 it could be a chair or a desk, but still it's
23 office furniture.
24 So this -- the claim construction
25 is comprised with my opinion applied to it.
1 It's my -- the plain and ordinary meaning can
2 be broader, but my opinion on that is still
3 consistent with this.

Only Petitioners' Reply Contends That *Rosenberg/Nakazawa* Discloses Or Renders Obvious the Double Distance, Same Size Requirement

The only dispute is whether the other transformations in *Rosenberg/Nakazawa* disclose the double-distance, same-size features. POR, 22-32. But, as shown in the Petition/evidence, a POSITA would have understood that the *Rosenberg/Nakazawa* transformations mimicking a standard household mirror (*Rosenberg*, [0027], [0038], [0077]) provide such well-known features. Pet., 21-27; Decl., ¶¶41-47, 122-134; Ex. 2012, 47:1-52:2, 84:11-88:21, 254:3-255:8, 105:5-106:13, 106:20-110:2.

Petitioners' reliance on *Axonics* is misplaced.

Mfg. v. Rea, 733 F.3d 1355, 1362 (Fed. Cir. 2013). Nor are Petitioners raising *new* arguments. But, even if they were, Petitioners are allowed to address the construction Patent Owner now urges the Board adopt. *Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374, 1381 (Fed. Cir. 2023); TPG, 45.

***Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374 (Fed. Cir. 2023)**

The holding in *Axonics* concerned instances in which the Patent Owner or the Board has proposed a new construction.

“But before the Board decides a case under a construction adopted after the institution decision, it must give a petitioner an opportunity to respond to the new construction, **whether that construction was first proposed by the patent owner or the Board.**”

- Construction at issue in this case is one that Petitioners chose not to address

***Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374 (Fed. Cir. 2023)**

***Axonics* does not authorize a petitioner to rely on new prior art, such as art supplying the missing purported “background knowledge” of a POSITA.**

“That is not to say a petitioner may rely on new prior art in response to a new claim construction presented in the patent owner response. We have held that a petitioner may not in reply rely on new prior art to teach a claim limitation.”

- Petition did not rely on Straka or Francois to establish how limitation 1(c) was met

Petitioners' reliance on *Meta* is misplaced.

- “Rather, we find these arguments properly elaborate on the Petition, in response to the proposed construction of ‘link’ in Patent Owner’s Response.”
 - Unlike in *Meta*, this is ***Petitioners’ own construction*** that it chose not to **address** in its Petition
 - Petitioners here do far more than “elaborate” on the discussion of the Grounds in the Petition

Petitioners' reliance on *Meta* is misplaced.

- “Patent owner does not explain why a reply that cites a **subcomponent** of an item cited in the petition would necessarily go beyond properly elaborating on the arguments in the petition.”
 - Unlike in *Meta*, the double distance, same size requirement is ***not a subcomponent*** of mirror mimicking.
 - Petitioners' district court construction imposes additional requirements never addressed in the Petition

Patent Owner Has Not Narrowly Interpreted Petitioners' Construction

“To the extent any narrowing has been proposed, it is through Patent Owner’s narrow interpretation of the magistrate judge’s recommended construction. For example, in attempting to distinguish Rosenberg, Patent Owner argues that the claims require a “difficult,” “complex,” or “unconventional” transformation to “convincingly mimic[] a conventional mirror,” or “detailed 3D geometric information.” POR, 30, 31; Ex. 2013, ¶¶ 66, 74, 439-441; *but see* Ex. 1046, 56:7-64:19 (Dr. Forsyth admitting that the transformation does not use 3D geometric information).”

Petitioners’ Opp. to Mtn. to Strike (Paper No. 39) at 7.

However, the ’109 Patent makes clear that mimicking a mirror’s reflection requires *more* than simply displaying a reversed image/video of a user. . . . [T]he ’109 Patent describes that “when a user looks at himself in the mirror, what he actually sees is the reflection of himself as if he was standing at a distance that is *double the distance* from him to the mirror.” . . . Third, when describing conventional mirrors, the ’109 Patent provides that “the angle of the user’s Field of View (FOV) changes when the user changes the distance, e.g., gets closer, to the mirror.” *Id.* at 2:10-12. “Consequently, as illustrated in FIG. 5B, when the user approaches [a conventional] mirror . . . he continues to see the *same size reflection . . . so that the user actually sees himself roughly at the same size*, but closer.” *Id.* at 2:19-23; *see also* 14:25-5

Petitioner Samsung’s Responsive Claim Construction Brief (Ex. 2009) at 13-14 (cited: POR (Paper No. 22) at 16).

Haag-Streit AG v. Eidolon Optical, LLC

Petitioners may not attempt to gap-fill with alleged background knowledge that was not previously argued for limitation 1(c).

We do not agree with Petitioner’s position. Although Petitioner does not seek to *formally* change the asserted ground at issue to add Nishizawa, with the discussion in the Reply summarized above (and the related testimony of Dr. Jiao), Petitioner improperly seeks to rely on Nishizawa to set forth new positions to address the “electrical resistor” limitation—i.e., not merely to show the state of the art at the time of the invention, as asserted. Mot. 3–4; *see* Trial Practice Guide Update, 15 (“It is also improper to present in reply new evidence (including new expert testimony) that could have been presented in a prior filing, for example newly cited prior art references intended to ‘gap-fill’ by teaching a claim element that was not present in the prior art presented with the petition.”).

Haag-Streit AG v. Eidolon Optical, LLC

Petitioners' argument that there is no attempt to gap-fill or offer an alternative was the same argument rejected in *Haag-Streit*.

For example, in the Reply, Petitioner provides Nishizawa as evidence of the new position that the prior art, *in general*, taught the use of a fixed “electrical resistor.” See Pet. Reply 34. This understanding is supported by Petitioner’s statement that one of ordinary skill in the art “would be motivated to combine *any resistor, whether variable or not*, with an LED knowing that current must be limited for the LED” (Pet. Reply 34 (emphasis added)), which implicitly frames Nishizawa’s resistor as *an alternative* to the “variable” resistor Patent Owner argues Devonshire discloses. See PO

Haag-Streit AG v. Eidolon Optical, LLC

Petitioners attempt to gap-fill with alleged background knowledge that was not previously argued for limitation 1(c).

exhibit until filing the Reply. For the first time in the Reply, Petitioner discusses the prosecution history of the '796 application to set forth new positions to address the added limitations in claims 9 and 10. Mot. 6. Specifically, we agree with Patent Owner, that with the discussion in the Reply summarized above (and the related testimony of Dr. Jiao), Petitioner improperly seeks to rely on the common knowledge of one of ordinary skill in the art—as an *alternative* to Longobardi—to address the added limitations recited in claims 9 and 10. *See* Mot. 6 (arguing “Petitioner tries to gap-fill

Only Petitioners' Reply Contends That *Rosenberg/Nakazawa* Discloses Or Renders Obvious the Double Distance, Same Size Requirement

The only dispute is whether the other transformations in *Rosenberg/Nakazawa* disclose the double-distance, same-size features. POR, 22-32. But, as shown in the Petition/evidence, a POSITA would have understood that the *Rosenberg/Nakazawa* transformations mimicking a standard household mirror (*Rosenberg*, [0027], [0038], [0077]) provide such well-known features. Pet., 21-27; Decl., ¶¶41-47, 122-134; Ex. 2012, 47:1-52:2, 84:11-88:21, 254:3-255:8, 105:5-106:13, 106:20-110:2.

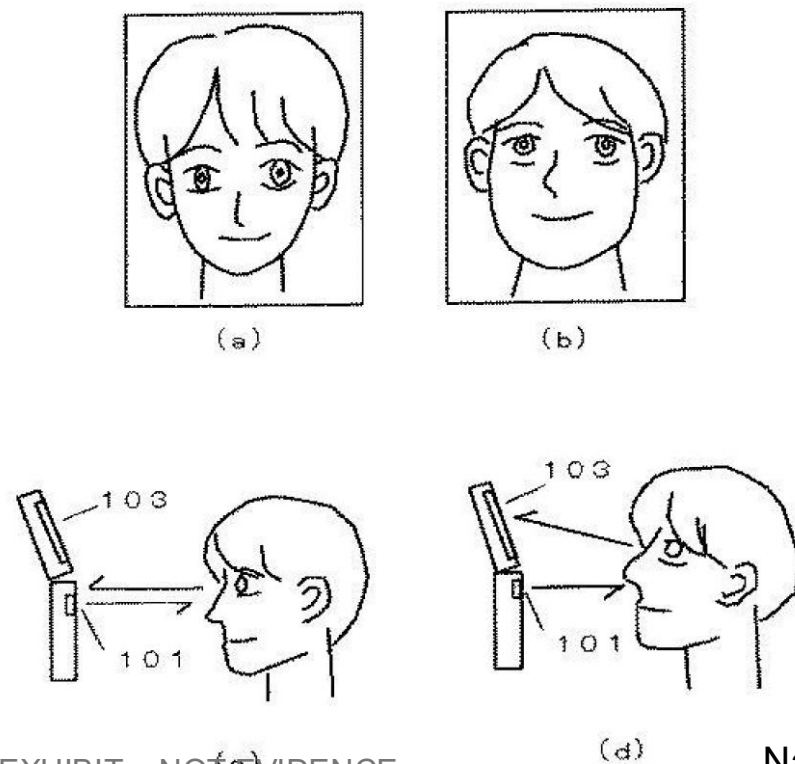
Only Petitioners' Reply Contends That *Rosenberg/Nakazawa* Discloses Or Renders Obvious the Double Distance, Same Size Requirement

[0077], [0082]-[0083], [0106], Fig. 5. Indeed, in deposition, Dr. Forsyth confirmed *Rosenberg/Nakazawa*'s scaling and distortion-correction transformations are those recited in the '109 patent for achieving double-distance/same-size features. Forsyth Tr., 147:13-149:7, 157:6-11, 49:3-52:18. *Rosenberg* and *Nakazawa* therefore render obvious "mirror mimicking," even under the magistrate judge's construction.

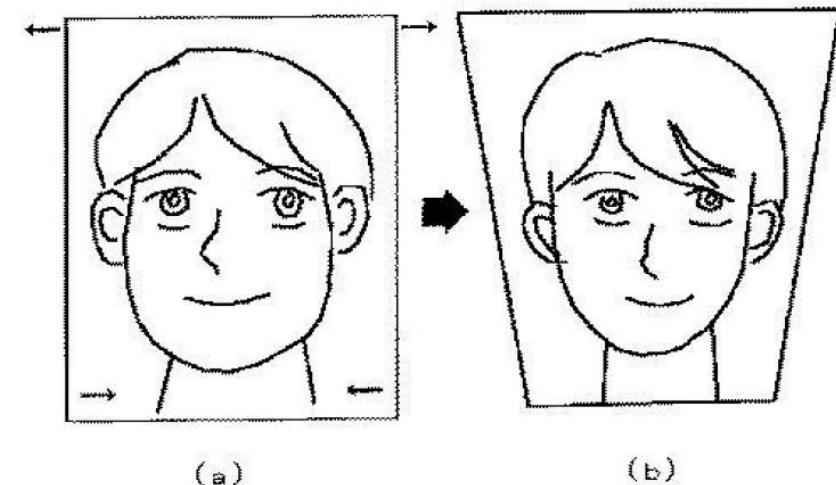
Nakazawa's Disclosure of Distortion Correction is Unrelated to Mirror Mimicking

[0033]

FIG. 3 is a diagram depicting how to correct the image captured as depicted in FIG. 2(d). An image captured from below is best corrected, as shown in FIG. 3A, by extending the width while moving upwards from the center of the image and narrowing the width while moving downwards. When such image correction is performed, the corrected image appearing to be captured with front orientation can be obtained, as depicted in FIG. 3(b).



[FIG. 3]



Nakazawa Does Not Disclose Or Render Obvious Limitation 1(c)

Declaration of Dr. Forsyth

442. It is my opinion that Nakazawa does not disclose limitation 1(c) under the construction of “it appears to mimic reflection of a mirror” in the District Court Litigation.

443. Nakazawa is directed to a photographing device that corrects the line of sight of a captured facial image. *See, e.g.*, Ex.1007, ¶¶0001, 0007.

444. At most, a POSITA may consider Nakazawa as disclosing simple inversion of the image.

445. Nakazawa is silent as to more advanced mirror mimicking techniques such as ensuring the user’s image appears at roughly double the distance to the camera. A POSITA would regard this silence as constituting non-disclosure.

Petitioners' Cited Material From Rosenberg Does Not Show District Court Construction Is Met

The only dispute is whether the other transformations in *Rosenberg/Nakazawa* disclose the double-distance, same-size features. POR, 22-32. But, as shown in the Petition/evidence, a POSITA would have understood that the *Rosenberg/Nakazawa* transformations mimicking a standard household mirror (*Rosenberg*, [0027], [0038], [0077]) provide such well-known features. Pet., 21-27; Decl., ¶¶41-47, 122-134; Ex. 2012, 47:1-52:2, 84:11-88:21, 254:3-255:8, 105:5-106:13, 106:20-110:2.

- Citations do not establish why or how a POSITA would understand *Rosenberg/Nakazawa* to disclose transformations of images such that the images:
 - appear roughly double the distance to the user
- AND
- Maintain roughly the same size regardless of user movement

Rosenberg Never Discloses the Double Distance, Same Size Requirement

In this way the user can view his or her own image quickly and conveniently by simply stepping before the display portion of the digital mirror. In addition, embodiments of the present invention may be configured to provide a plurality of digital mirror display modes that may be selectively engaged by the user through hands-free user interactions. In a basic mode of operation, referred to herein a traditional mirror emulation mode, the digital mirror is operative to replicate the performance of a standard household mirror, providing the user with a left-right reversed frontal image of himself or herself when standing before the display. This is achieved by streaming a left-right inverted representation of the real-time video imagery from a camera aimed at the user to a screen portion of the display, the camera being mounted and aimed such that it points back at the user from a position on or near the display. In a preferred embodiment, the camera is positioned such that it is centered with respect to the screen area of the display. In basic embodiments the camera is mounted directly above the screen area of the display, generally near the center. This 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. 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. Such embedded-camera embodiments provide a superior arrangement because they provide the user with a natural and accurate visual perspective of himself or herself as compared to a traditional mirror. In many such embedded-camera embodiments the camera imaging frame rate is interlaced with the display imagery frame rate such that camera images are captured during off times between the image display. Thus by mounting the camera at such a location and in such a manner, the user will get the most closely approximated mirror image captured by the camera and projected upon the display. However, embodiments which have a camera mounted above the screen area may still be configured to provide an effective image, but the vantage point will simply being slightly higher than the eye-level vantage point with which users are familiar. This raised vantage point is sometimes advantageous, giving users an increased view of the top of their head, an area that is often the focus of hair brushing.

Rosenberg Never Discloses the Double Distance, Same Size Requirement

When in one of these **real-time mirroring modes**, the hardware and software rapidly update the image upon the display screen with a representation of the real-time digital video imagery collected from the camera. **Because the camera is aimed back at the user from within, upon, or nearly upon the location of the display screen, this imagery will show a frontal depiction** of any user or users who are standing substantially in front of the display screen and looking upon the screen while facing forward. In general, the rapid update rate is of a speed and lag such that it seems real-time and continuous to a human user. Typically an update rate of 60 HZ or more will be pleasing to a human user. In some embodiments update rates substantially higher than this may be used. In addition, the lag time is generally kept small (i.e., the time between image capture and image display), on the order of milliseconds or tens of milliseconds. Thus, when in a real-time mirroring mode, the image frames collected from the camera are captured at a rapid rate and displayed with minimal lag, **providing a user with a real-time mirroring experience that responds in real time very much like a traditional mirror.** As a user, for example, moves his arms about while brushing his or her hair, the image displayed upon the screen **will appear continuously updated in real time.**

Rosenberg Never Discloses the Double Distance, Same Size Requirement

FIG. 5 illustrates a computer rendering of a human user **501** standing in front of a wall-mounted embodiment of the advanced digital mirror system **502** according to at least one embodiment of the present invention. The user's image is captured as a real-time video image by a camera upon or within the digital mirror **502** as described previously. A representation of that real-time video image is then displayed upon the wall mounted screen of the digital mirror **502** with a displayed size and scaling such that it appears like a traditional life-size mirror image **503**. In a traditional mirror emulation mode, the real-time video image is left-right inverted prior to display upon the screen. Thus the user **501** standing before the digital display is given the visual impression that he or she is standing before a traditional wall mirror, viewing a traditional mirror image of himself or herself.

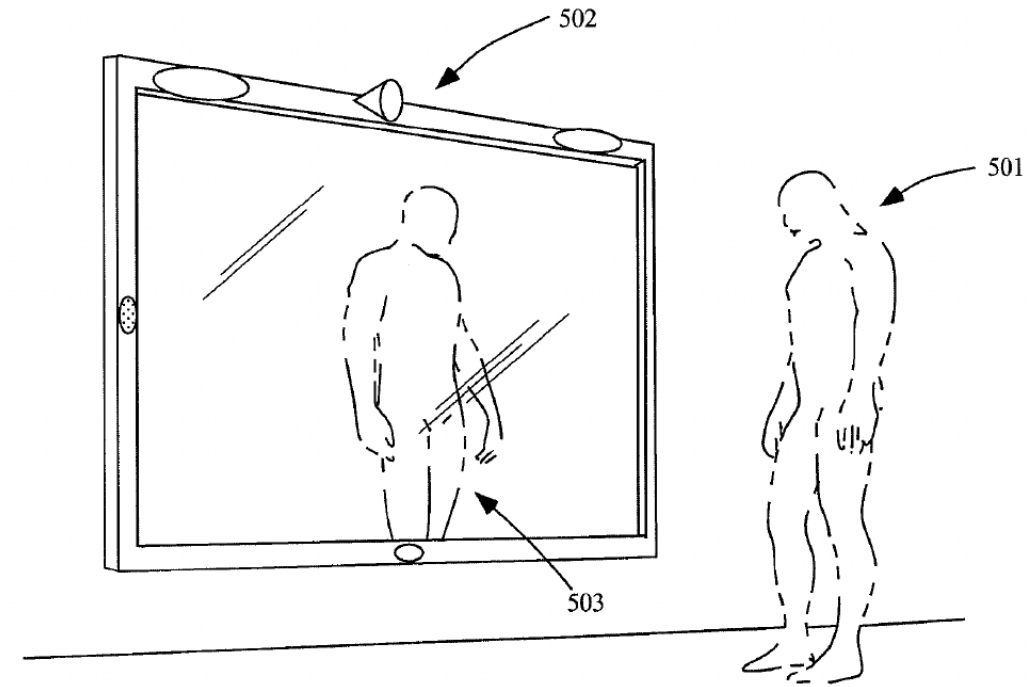


Fig. 5

For the First Time In Their Reply, Petitioners Rely on Alleged Background Knowledge of a POSITA To Fill Gaps In *Rosenberg/Nakazawa*

Dr. Karam then explains that it was well-known for digital camera systems to apply transformations (e.g., scaling, viewpoint adjustments) to replicate reversed, double-distance, same-size features. Decl., ¶¶41-52; *Straka*, 637, 640-41, Figs. 1(b), 4(a); *François*, §§2.1, 2.3, Figs. 2, 5; *Rosenberg*, [0027]-[0028], [0077], Fig. 5. She explains, to mimic a conventional mirror, the camera-captured image is transformed to render an image captured at a virtual viewpoint symmetrical to a user's viewpoint, causing it to appear left-right inverted at roughly double the distance and the same size—to have a “mirror effect.” Decl., ¶¶48-52; *Straka*, 640-41, Fig. 1(b); *François*, §§2.1, 2.3, Figs. 2, 5. According to Dr. Karam, if the art replicates the conventional mirror, a POSITA would have understood it provides the reversed, double-distance, same-size features. Decl., ¶¶41-52; Ex. 2012, 47:1-52:2, 84:11-88:21, 254:3-255:8, 105:5-110:2.

Scaling in Rosenberg

Dr. Karam opined that paragraph 77 of Rosenberg meets the district court's construction.

3 "A representation of that
4 real-time video image is then
5 displayed upon the wall-mounted
6 screen of the digital mirror with a
7 displayed size and scaling such that
8 it appears like a traditional
9 life-size mirror image."

10 So indeed a POSITA would
11 understand that Rosenberg is teaching and
12 disclosing his invention is capable or is
13 teaching, disclosing his invention can make
14 the person see himself or herself as appearing
15 in a traditional life-size mirror.

Karam Dep. (Ex. 2012) at 60:3-15 (cited:
Petitioners' Reply (Paper No. 26) at 12).

[0077] FIG. 5 illustrates a computer rendering of a human user 501 standing in front of a wall-mounted embodiment of the advanced digital mirror system 502 according to at least one embodiment of the present invention. The user's image is captured as a real-time video image by a camera upon or within the digital mirror 502 as described previously. A representation of that real-time video image is then displayed upon the wall mounted screen of the digital mirror 502 with a displayed size and scaling such that it appears like a traditional life-size mirror image 503. In a traditional mirror emulation mode, the real-time video image is left-right inverted prior to display upon the screen. Thus the user 501 standing before the digital display is given the visual impression that he or she is standing before a traditional wall mirror, viewing a traditional mirror image of himself or herself.

Rosenberg (Ex. 1005), ¶ [0077] (cited:
Petitioners' Reply (Paper No. 26) at 11).

Petitioners Rely on Alleged Background Knowledge of a POSITA

The Petition did not rely on this “background knowledge” for limitation 1(c)

- d. 1[c]: “*applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror;*”

Rosenberg and *Nakazawa* render obvious this limitation. Decl. ¶¶124-129.

Rosenberg discloses flipping video images about a vertical axis and scaling them so the user has the impression of viewing a mirror (“*mimic a reflection of a mirror*”). Sections V.A.1, V.A.4.c, V.A.4.e; *Rosenberg*, [0003], [0026]-[0027], [0035], [0041], [0061], [0068], [0077], [0083]. A POSITA would have understood *Rosenberg*’s flipping and scaling are “*transformation mapping*,” for each maps the position of each pixel to a position of a corresponding pixel of a modified

image. Decl. ¶125. Indeed, the ’109 Patent explains “*transformation mapping*” includes left-right flipping and scaling (’109 Patent, 22:1-13, 23:60-24:9, 24:51-53, 29:22-58). *Id.*

If the claims require additional transformations, this limitation would have been obvious over *Nakazawa*. Decl. ¶¶126-129. *Nakazawa* discloses correcting image distortion when the camera is above/below the display, and the user looks at the display during capture. *Nakazawa*, [0001]-[0003], [0008], [0032], [0034]. If a user looks at the display (not the camera) during capture (Figure 2(d)), a distorted image (Figure 2(b)) is captured. *Id.*, [0031]-[0032].

Rosenberg Mirror Mimicking Is Simple Inversion

A POSITA would have understood paragraph 77 in the context of Rosenberg's teaching that mimicking a traditional mirror only requires simple inversion.

440. I disagree with Dr. Karam's opinion that paragraph 77 of Rosenberg means the image in Rosenberg appears at roughly double the distance from the camera. Ex.2012, 59:7-60:20. In my opinion, a POSITA would not have understood the use of the phrase "with a displayed size and scaling such that it appears like a traditional life-size mirror image" in paragraph 77 of Rosenberg to mean that the image appears at roughly double the distance from the camera and/or roughly the same size regardless of user distance to the camera. A POSITA would not have understood this to be what paragraph 77 discloses. A POSITA would have understood that paragraph 77 makes clear just what Rosenberg regards as constituting a "traditional mirror emulation" – simple left-right inversion, nothing more. Given that Rosenberg's "traditional mirror mode" discloses only flipping an

image, it would be apparent to a POSITA that Rosenberg did not consider the importance of addressing these optical properties, or implement them.

Rosenberg Mirror Mimicking Is Simple Inversion

Rosenberg discloses only simple image inversion to mimic a traditional mirror.

439. Rosenberg discloses basic image inversion. *See, e.g.,* Ex.1005, ¶ 0026 (“This left-right inversion process is performed to present the user with a traditional mirror image view of himself or herself, inverted in a similar way [sic] as would be seen in a traditional optical mirror.”). Consequently, it is my opinion that a POSITA would not have understood Rosenberg to address what is the difficult and more

complex technical issue of having the inverted image appear at roughly double the distance of the user to the camera. This failure to address more complex mirror mimicking techniques in combination with Rosenberg’s disclosure in paragraph 39, stating that it is undesirable to have the user’s image appear at approximately double the distance to the camera, would cause a POSITA to: (1) regard Rosenberg’s invention as not including this optical property of a conventional mirror; and (2) be discouraged from attempting to implement this optical property of a conventional mirror because it does not permit the benefits (such as closer inspection of the user’s own image) that Rosenberg is trying to achieve.

Rosenberg Teaches Away From Double the Distance

Rosenberg

Thus a user may be looking in the mirror, engage the mirror image-freeze feature, and have the then current (or substantially current) image that was displayed upon engaging the feature, freeze upon the screen for an extended period. This will allow the user, for example, to examine the frozen image in detail. This is particularly useful for a user who wishes to change his or her distance and/or location with respect to the mirror to get a better view of his or her image, but NOT have the image change as the user moves. For example, a user may wish to step closer to the mirror and view a portion of his or her face from only a few inches away. With a traditional optical mirror, such an act would cause the reflected image to change such that the user who is just a few inches away ends up staring into his or her own eyes. In reality he may wish to freeze the image, step close, and then view some other portion of the face. The mirror image-freeze feature of the present invention enables this enhanced mirroring operation.

A POSITA Would Regard Rosenberg As Teaching Away

Declaration of Dr. Forsyth

437. It is my opinion that a POSITA would understand Rosenberg to find the optical property of a conventional mirror whereby the person looking into the mirror appears at double the distance from the mirror to be suboptimal. A POSITA would also understand that Rosenberg affirmatively chose not to include this optical property in his invention.

Importance of These Properties Was Not Obvious

Even if known, it would not have been obvious to a POSITA that these conventional mirror properties were important enough to implement.

450. It is my opinion that any assertion that a POSITA reading Rosenberg and Nakazawa would have automatically been able to easily and without undue experimentation implement the known optical properties of a conventional mirror that the user's image appears roughly double the distance to the mirror and roughly the same size regardless of user movement, relies on hindsight bias. Although these optical properties of conventional mirrors likely have been known for millennia, it is my opinion that a POSITA reading Rosenberg and Nakazawa would not have considered the relative importance of including these optical properties beyond simple inversion. This is because Rosenberg teaches away from incorporating the optical property of having a user's image appear at roughly double the distance of the user to the camera and Nakazawa does not disclose it at all. Therefore, in my opinion a purported combination of Rosenberg and Nakazawa would not have suggested inclusion of these optical properties to a POSITA.

Dr. Forsyth: Importance of Double Distance, Same Size Was Not Obvious

Q: Is it your opinion that providing double the distance in same size properties of a conventional mirror more difficult and more complex than flipping the image?

A: Yes.

Q: In your view, a POSITA would not know how to implement these known conventional mirror properties with known transformation techniques?

A: I think my view is stated that a POSITA would not have realized it was important. And the support for that view in the fact that Rosenberg doesn't do it, nor do a number of other people.

Q: So in your opinion, a POSITA would not have realized those features are important?

A: In my opinion, a POSITA -- a POSITA would not have realized those features were important. And a number of documents I've looked at here describe mirror emulation without having those features, suggesting that authors at the time did not realize that it was important either.

NO MOTIVATION TO COMBINE *ROSENBERG/NAKAZAWA* TO ACHIEVE LIMITATION 1(c)

No Motivation to Combine Rosenberg/Nakazawa

A POSITA would not have been motivated to combine Rosenberg/Nakazawa.

449. Additionally, a POSITA would not have been motivated to combine Rosenberg and Nakazawa because Rosenberg teaches away from having the user's image appear at roughly double the distance from the camera and because Nakazawa (at most) only discloses basic image inversion and does not disclose the user appearing at roughly double the distance to the camera.

No Motivation to Combine Rosenberg/Nakazawa

450. It is my opinion that any assertion that a POSITA reading Rosenberg and Nakazawa would have automatically been able to easily and without undue experimentation implement the known optical properties of a conventional mirror that the user's image appears roughly double the distance to the mirror and roughly the same size regardless of user movement, relies on hindsight bias. Although these optical properties of conventional mirrors likely have been known for millennia, it is my opinion that a POSITA reading Rosenberg and Nakazawa would not have considered the relative importance of including these optical properties beyond simple inversion. This is because Rosenberg teaches away from incorporating the optical property of having a user's image appear at roughly double the distance of the user to the camera and Nakazawa does not disclose it at all. Therefore, in my opinion a purported combination of Rosenberg and Nakazawa would not have suggested inclusion of these optical properties to a POSITA.

- Whether the Board should adopt Petitioners' district court construction of **“appears to mimic a mirror”**
- Whether the Asserted Grounds disclose or render obvious limitation 1(c): “applying a transformation mapping to the image to modify the image such that it **appears to mimic a reflection of a mirror**”
- Whether the Asserted Grounds disclose or render obvious limitation 1(h): **“varying rate at which the non-ordered steps are performed on the series of images according to the distance.”**

ASSERTED GROUNDS DO NOT DISCLOSE OR RENDER OBVIOUS LIMITATION 1(H)

The Asserted Grounds Do Not Disclose “varying the rate”

1 Preamble. A method for operating a system having a monitor, a camera, and a processor, so as to display a mirror-mimicking image on the monitor, by performing non-ordered steps comprising:

- 1a. obtaining a digital image from a camera;
- 1b. flipping the image about a vertical axis so as to reverse right and left sides of the image;
- 1c. applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror;
- 1d. resizing the image to reduce variations caused by changes in object's distance to the camera;
- 1e. displaying the image on the monitor after performing the flipping, transformation mapping, and resizing;
- 1f. wherein the non-ordered steps are performed on a series of images of a live video feed from the camera;
- 1g. determining distance to a user appearing in the live video feed;
- 1h. and, varying rate at which the non-ordered steps are performed on the series of images according to the distance.

District Court Claim Construction Order

“varying the rate . . .”

The Court accordingly hereby construes “varying rate at which the non-ordered steps are performed on the series of images according to the distance” to mean **“varying rate at which one or more non-ordered steps are performed on the series of images according to the distance.”**

EyesMatch v. Samsung, Claim Construction Order (Ex. 2008) at 28 (cited: POR (Paper No. 22) at 20).

Performance of the non-ordered steps 1b-1d must be varied

1 Preamble. A method for operating a system having a monitor, a camera, and a processor, so as to display a mirror-mimicking image on the monitor, by performing non-ordered steps comprising:

1a. obtaining a digital image from a camera;

1b. flipping the image about a vertical axis so as to reverse right and left sides of the image;

1c. applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror;

1d. resizing the image to reduce variations caused by changes in object's distance to the camera;

1e. displaying the image on the monitor after performing the flipping, transformation mapping, and resizing;

1f. wherein the non-ordered steps are performed on a series of images of a live video feed from the camera;

1g. determining distance to a user appearing in the live video feed;

1h. and, varying rate at which the non-ordered steps are performed on the series of images according to the distance.

Grounds 1-25: *Rosenberg/Nakazawa* Do Not Disclose “varying the rate”

Rosenberg discloses turning off the mirror mode based on distance, not varying the rate of steps of the mirror mode.

The digital mirror further includes a novel proximity and/or motion sensor for detecting when a user is physically present before and/or approaches and/or stands before the display screen of the mirror within some proximity range and automatically engages the digital mirror functionality of the present invention. The digital mirror also provides for dual-state operation embodiments in which the system displays digitized wall artwork or photographs when not in a mirroring mode and wherein the system automatically enters a mirroring mode when a user steps in front of the display screen for more than a threshold amount of time and/or when the user utters a particular verbal command. The digital mirror also provides for dual-state operation embodiments in which the system automatically enters a power-conservation mode, sending reduced power to the display screen when a user is not standing before the mirror for more than a threshold amount of time and wherein the system automatically enters a mirroring mode when a user steps in front of the display screen and/or when the user utters a particular verbal command.

Grounds 1-25: Rosenberg/Nakazawa Do Not Disclose “varying the rate”

Petitioners’ theory is based on Rosenberg’s system switching between different modes.

Rosenberg then discloses switching between the digital-mirroring state and a digital-picture-frame state, the latter of which is a state during which the non-ordered steps are not performed, according to user distance. Pet., 33-34; Decl., ¶152. As the *Rosenberg/Nakazawa* system switches between these states based on user distance, the non-ordered steps transition between being performed and not performed, and as such, the rate at which these steps are performed varies. Pet., 34; Decl., ¶¶153-154. Dr. Karam explained this distance-dependent operation would cause the rate of performing those steps to vary over the period in which *Rosenberg*’s system switches between modes based on user distance. Pet., 33-34; Decl., ¶¶150-154; Ex. 2012, 99:2-100:21 (“operating as a system together”; “within this operation of a system, the rate is indeed varied”); *Rosenberg*, [0025] (“dual-state” operation). This aligns with the “varying rate” noted in the ’109 patent. See, e.g., Ex. 1001, 6:1-5, 15:4-58, 18:40-57, 22:36-51, 23:18-23, 24:22-34, 26:1-7, 27:49-28:1, Figs. 9, 12; Pet., 32-34; Decl., ¶¶149-152.

- No single mode in *Rosenberg* discloses varying the rate of performing steps on the images based on a user’s distance
- A POSITA would not have understood turning on/off a system to vary the rate at which steps are performed

Grounds 1-25: Rosenberg/Nakazawa Do Not Disclose “varying the rate”

A POSITA would not have regarded turning on/off a system to vary the rate at which the steps are performed.

454. Rosenberg does not suggest varying the rate of performing image processing steps at all, let alone based on distance. It is my opinion that a POSITA would regard Rosenberg’s silence as to varying the rate of performing image processing steps as non-disclosure.

455. Rosenberg discloses proximity detection in connection with turning on and off various modes of operation but not in connection with varying the rate of one or more steps that are performed to transform a captured image.

Grounds 1-25: Rosenberg/Nakazawa Do Not Disclose “varying the rate”

For the first time in her deposition, Dr. Karam contended that Rosenberg has a “super mode”.

3 Now, Rosenberg has referred to
4 the mode, you know. That said, the system
5 operation encompasses both of these modes
6 necessarily, okay?
7 And given that, we can call it
8 "mode" here. I can call it a supermode, the
9 mode where we have the mirror-mimicking, which
10 also has the display. Because a user wouldn't
11 be there and then suddenly would come there.
12 And a user is not going to just keep standing;
13 he's going to leave.
14 So necessarily these modes are
15 operating as a system together and, therefore,
16 necessarily, if you want to consider something
17 operating as a system together, a mode, I
18 would call it a mode.
19 And given that within this
20 operation of a system, the rate is indeed
21 varied.

Grounds 1-25: Rosenberg/Nakazawa Do Not Disclose “varying the rate”

There is no “super mode,” and a POSITA would not have regarded turning on/off a system to be a mode of operation with the on/off varying the rate at which the steps are performed.

458. In her deposition Dr. Karam further testified that turning on and off the disclosed modes in Rosenberg as part of this undisclosed “super mode” meets limitation 1(h). A POSITA would not have regarded switching discrete modes in Rosenberg based on proximity sensors as meeting limitation 1(h): “varying rate at which the non-ordered steps are performed on the series of images according to the distance”. This is because the discrete modes in Rosenberg are not steps and proximity to the camera only determines whether to turn on or off the mirror display functionality – not the specific modes utilizing the mirror display as a mirror.

Grounds 2, 4: Hatanaka Does Not Disclose “varying the rate”

Hatanaka discloses encoding changes based on distance.

a. *Hatanaka* Suggests Varying the Rate According to User Distance to Conserve Power

Hatanaka discloses reducing image-data-related processing throughput, such as by reducing the frame rate or the resolution of encoding/decoding data, as distance increases to save power. Pet., 47-49; Decl., ¶¶83-85, 190; *Hatanaka*, [0008], [0012], [0018], [0023], [0028]-[0029], [0037]-[0039]. Patent Owner fails to address this.

Reducing frame rate or resolution does disclose or render obvious varying the performance of the recited processing steps

1 Preamble. A method for operating a system having a monitor, a camera, and a processor, so as to display a mirror-mimicking image on the monitor, by performing non-ordered steps comprising:

1a. obtaining a digital image from a camera;

1b. flipping the image about a vertical axis so as to reverse right and left sides of the image;

1c. applying a transformation mapping to the image to modify the image such that it appears to mimic a reflection of a mirror;

1d. resizing the image to reduce variations caused by changes in object's distance to the camera;

1e. displaying the image on the monitor after performing the flipping, transformation mapping, and resizing;

1f. wherein the non-ordered steps are performed on a series of images of a live video feed from the camera;

1g. determining distance to a user appearing in the live video feed;

1h. and, varying rate at which the non-ordered steps are performed on the series of images according to the distance.

Grounds 2, 4: Hatanaka Does Not Disclose “varying the rate”

Hatanaka does not disclose varying the rate at which processing steps are performed.

483. In my opinion, a POSITA would also understand that even though Hatanaka determines distance from a display apparatus (a “representation output part”) to a viewer of content (*see, e.g.*, Ex.1009, ¶¶0009, 0010), and can change the resolution at which video is encoded according to the distance of the viewer to the display device, or change some other encoding parameter, such as “frame rate, quantization step size, compression ratio” (*id.* at ¶0039), there is no disclosure that the rate at which processing or encoding steps are varied at all, let alone based on distance. A POSITA would know that varying the *resolution* at which an image is encoded does not change the frequency or rate at which that encoding (or any other processing step) occurs. A POSITA would know that the encoding will still occur, but at a lower resolution.

484. A POSITA would know that Hatanaka’s disclosure of varying encoding parameters such as resolution or frame rate is varying a property of a system that is very different from the rate at which processing steps are performed, which is disclosed in the 109 Patent, and for a different purpose. A POSITA would recognize that Hatanaka is not directed toward transformation of captured images, such as by flipping, resizing, or applying other image transformations so that the image “appears to mimic a mirror” under the construction in the District Court Litigation. And a POSITA would not regard Hatanaka as disclosing any of those things.

Grounds 2, 4: Hatanaka Does Not Disclose “varying the rate”

Hatanaka does not disclose varying the rate at which processing steps are performed.

485. A POSITA would have regarded Hatanaka as being concerned with varying the parameters of an encoder so that it encodes content to have different resolutions, frame rate, quantization step size, compression ratio and so on to reduce throughput. Ex.1009, ¶¶0009, 0010. A POSITA would have known that each of these variations in encoder parameters can be achieved with image processing at a fixed rate.

NO MOTIVATION TO COMBINE *ROSENBERG/NAKAZAWA/HATANAKA* FOR LIMITATION 1(h)

No Motivation to Combine Rosenberg/Nakazawa/Hatanaka

488. It is also my opinion that it would not have been obvious to a POSITA to modify Rosenberg/Nakazawa in view of Hatanaka providing the *concept* of varying some aspect of image processing, to achieve the claimed varying of image transformation *steps* of the 109 Patent, as Petitioners appear to contend (Pet. at 49-50). I disagree with Petitioners' assertion that this modification would merely "apply[] a known technique to improve a similar device in the same way to yield the predictable result of efficient image processing." Pet. at 50. This assertion by Petitioners is not supported. In my opinion not only would a POSITA not regard Rosenberg's mirror device and Hatanaka's display system as similar devices, but as noted above, Hatanaka's disclosure that image encoding can be variable based on distance from a display to an audience is a different technical concept than either Rosenberg's disclosure of performing a simple image transformation (flipping an image along its vertical axis) (*e.g.*, Ex.1005, ¶0039), and the 109 Patent's disclosure of varying the rate at which image transformation *steps* are applied based on distance to the subject captured in a series of images. A POSITA would be aware of image encoding and variations in encoding resolution and frame rate as techniques to provide efficient processing and throughput. However, it is my opinion that the leap from that knowledge to modifying the rate at which a set of image transformation steps were applied to a series of captured images so that they "appear to mimic a mirror" would not be obvious to a POSITA. In my opinion, although both are within the broad general category of "image processing," they are different technical concepts, with different technical considerations.

Ground 3: Tripathi Does Not Disclose “varying the rate”

Tripathi adjusts the frame rate based on content type, not distance

a. *Tripathi Suggests Varying the Rate of Image Processing According to User Distance*

Tripathi discloses adjusting the display frame rate in response to content type (static/dynamic) or power supply to conserve power. Pet., 33, 53-55; Decl., ¶¶86-88, 214-218, 222-223; POR, 55-56; Ex. 2013, ¶487. The content type or power status of *Rosenberg/Nakazawa* depends on user distance. Pet., 33, 53-55; Decl., ¶¶86-88, 214-218, 222-223. A POSITA would have varied the rate of *Rosenberg/Nakazawa*’s non-ordered steps in view of *Tripathi* based on distance-dependent content type or power status to save power or improve user experience. Pet., 53-55; Decl., ¶¶86-88, 214-218.

Ground 3: Tripathi Does Not Disclose “varying the rate”

Tripathi adjusts frame rate based on affirmative user actions.

524. A POSITA would recognize that Tripathi discloses that frame rate may, in general, be adjusted based on (1) type of display content to be displayed (*e.g.*, static or dynamic); (2) user-input signals (*e.g.*, swipe, pinch, tap); (3) device power supply status; (4) other aspects of device operation. *See, e.g.*, Ex.1040, Abstract, 1:52-59, 5:42-51, 5:58-6:3, 6:29-39. A POSITA would realize that the only expressly user-related category is affirmative user actions – “user-input signals”.

Ground 3: Tripathi Does Not Disclose “varying the rate”

Dr. Karam assumed that detecting dynamic content involves determining distance despite any disclosure in *Tripathi* of doing so.

5 So in dynamic, you have to take
6 into account also change in distance because
7 that would be also dynamic content. There's
8 another dynamic content that's not based on
9 this.

10 But to detect dynamic, you have
11 to have the distance there. It should be part
12 of it. That's what I'm saying.

13 Q. It should be, but does it have to
14 be is my question?

15 A. Yeah. Detect dynamic content,
16 all kinds of dynamic content. Then it has to
17 be according to the distance. You would have
18 also change of distance is dynamic.

Ground 3: Tripathi Does Not Disclose “varying the rate”

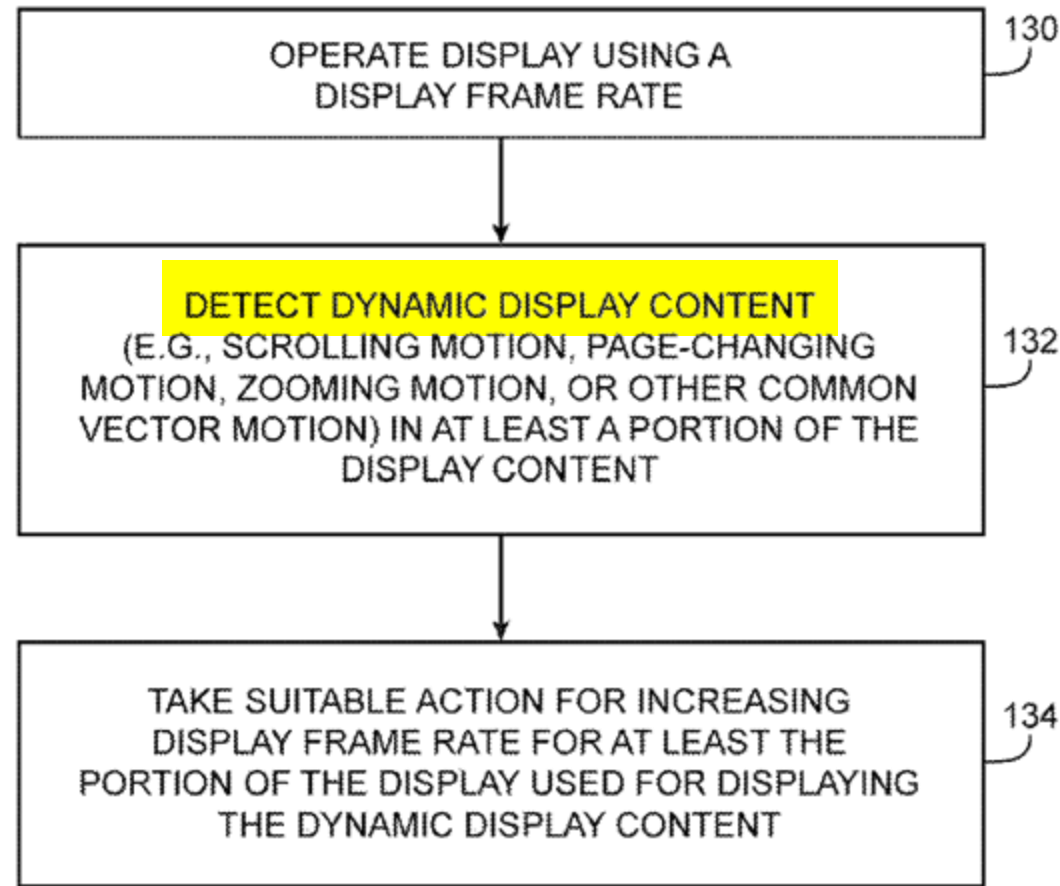


FIG. 11

Ground 3: Tripathi Does Not Disclose “varying the rate”

Tripathi adjusts frame rate based on affirmative user actions.

523. I disagree with Dr. Karam’s opinion, that Tripathi’s disclosure of adjusting frame rate based on the detection of dynamic content constitutes adjusting frame rate based on distance. Ex.1004, ¶¶ 223; Ex.2012, 145:18-146:18, 147:16-148:6. It is my opinion that Dr. Karam’s assertion is unsupported by the reference. Dr. Karam relied on Figure 11 of Tripathi to support her opinion. A POSITA would understand that this variation in frame rate is not based on the distance to a user as recited by limitation 1(h).

Ground 3: Tripathi Does Not Disclose “varying the rate”

Tripathi adjusts frame rate based on affirmative user actions.

Dr Karam offers the opinion that Tripathi's disclosure of adjusting frame rate based on the detection of dynamic content constitutes adjusting frame rate based on distance. Ex.1004, ¶ 223; Ex.2012, 145:18-146:18, 147:16-148:6. I disagree with this opinion. Dr. Karam relied on Figure 11 of Tripathi to support her opinion. A POSITA would understand that Figure 11 of Tripathi refers solely to adjusting frame rate based on the dynamic properties of the content to be displayed. The POSITA is presumed to have read Tripathi, where the POSITA would find in column 6, lines 29-39 examples of (a) the kind of dynamic content variations the device should respond to and (b) the kind of "user input signals" the device should respond to. Tripathi is clear that the user provides explicit signals. There is no support in Tripathi for the idea that variation in frame rate is based on distance to a user, and Figure 11 certainly does not support this idea. A POSITA would understand that this variation in frame rate is not based on the distance to a user as recited by limitation 1(h).

NO MOTIVATION TO COMBINE *ROSENBERG/NAKAZAWA/TRIPATHI* FOR LIMITATION 1(h)

Ground 3: No Motivation to Combine Rosenberg/Nakazawa/Tripathi

A POSITA would not have been motivated to combine based on reducing power consumption.

I disagree with Petitioners' assertion that a POSITA would have been motivated to combine Rosenberg and Tripathi because Rosenberg "seeks to reduce power consumption." Pet. at 54. A POSITA would have found it significant that the passages from Rosenberg that Petitioners cite to concern a low-power idle mode for when the user is not present (see, e.g., Ex.1005, ¶¶ 0025, 0032, 0033, 0069, 0070, 0071, 0072) whereas, by contrast, Tripathi's solution is directed to varying the frame rate when the display device is in use: "The variable frame rate may be actively determined during operation of device 10 based on whether static or dynamic display content is to be displayed". Ex.1040 at 6:10-12. Rosenberg's solution to power consumption is to reduce power when the user is not present by putting the display in an idle or off mode; there is no suggestion in Rosenberg that other solutions to power consumption are desirable and Tripathi's solution for power-saving is for when the device is in use. The difference between Rosenberg and Tripathi regarding power-saving solutions would have not suggested to a POSITA to combine these references to meet limitation 1(h).

No Motivation to Combine Rosenberg/Nakazawa/Tripathi

No motivation to combine because Tripathi adjusts frame rate based on affirmative user actions.

532. Additionally, a POSITA would not have been motivated to combine Tripathi with Rosenberg and Nakazawa to meet limitation 1(h) because unlike limitation 1(h) Tripathi's disclosure for varying the frame rate is based on affirmative user inputs and this variation in frame rate is not based on the distance to a user as recited by limitation 1(h). This is shown in the passages, figures, and claims from Tripathi below.



THANK YOU