

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WELLS FARGO BANK, N.A.,
Petitioner,

v.

UNITED STATES AUTOMOBILE ASSOCIATION,
Patent Owner.

Case No. IPR2019-01081
Patent No. 9,336,517

PETITIONER'S NOTICE OF APPEAL

Pursuant to 35 U.S.C. §§ 141(c) and 319 and 37 C.F.R. § 90.2(a), Petitioner Wells Fargo Bank hereby provides notice that it appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision entered January 11, 2021, (Paper No. 39), and from all underlying orders, decisions, rulings, and opinions relating to U.S. Patent No. 9,336,517 set forth in *Inter Partes* Review IPR2019-01081.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), the issues on appeal include, but are not limited to:

- the Board's determination that claims 1, 5, 6, 9, 10, 12, 13, and 18-20 of the '517 patent are not unpatentable under 35 U.S.C. § 103(a) based on Nepomniachtchi and Yoon;
- the Board's determination that claims 7, 8, 14, and 17 of the '517 patent are not unpatentable under 35 U.S.C. § 103(a) based on Nepomniachtchi, Yoon, and Cho; and
- any other issues decided adversely to Petitioner in an order, decision, ruling, or opinion underlying or supporting the Board's final written decision.

A copy of the decision being appealed is attached to this Notice.

Pursuant to 35 U.S.C. § 142 and 37 C.F.R. § 90.2(a), this Notice is being filed with the Director of the United States Patent and Trademark Office, and a copy of this Notice is being concurrently filed with the Patent Trial and Appeal Board. In addition, a copy of this Notice and the required docketing fees are being filed with the Clerk's Office for the United States Court of Appeals for the Federal Circuit via CM/ECF.

Respectfully submitted,

Date: January 22, 2021

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UNITED STATES PATENT AND TRADEMARK OFFICE

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WELLS FARGO BANK, N.A.,
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UNITED SERVICES AUTOMOBILE ASSOCIATION,
Patent Owner.

IPR2019-01081
Patent 9,336,517 B1

Before JONI Y. CHANG, STACEY G. WHITE, and
JULIET MITCHELL DIRBA, *Administrative Patent Judges*.

WHITE, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Claims Unpatentable
Dismissing Patent Owner's Motion to Exclude
35 U.S.C. § 318(a)

I. INTRODUCTION

Wells Fargo Bank, N.A. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1, 5–10, 12–14, and 17–20 (“the challenged claims”) of U.S. Patent No. 9,336,517 B1 (Ex. 1001, “the ’517 patent”). Paper 2 (“Pet.”). United Services Automobile Association (“Patent Owner”) filed a Preliminary Response. Paper 6. Based on our review of these submissions and associated evidence, we instituted *inter partes* review of the challenged claims. Paper 9 (“Dec.”). After institution, Patent Owner filed a Patent Owner Response (Paper 17, “PO Resp.”), Petitioner filed a Reply (Paper 22, “Reply”), and Patent Owner filed a Sur-Reply (Paper 23, “Sur-Reply”). Patent Owner filed a Motion to Exclude certain evidence submitted by Petitioner (Paper 29), Petitioner filed an Opposition (Paper 30), and Patent Owner filed a Reply (Paper 33).

A combined oral hearing with cases IPR2019-01081, IPR2019-01082, and IPR2019-01083 was held on September 23, 2020, and a transcript of the hearing is included in the record (Paper 38, “Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine Petitioner has not shown, by a preponderance of the evidence, that claims 1, 5–10, 12–14, and 17–20 of the ’517 patent are unpatentable. We dismiss as moot Patent Owner’s Motion to Exclude.

A. Related Matters

The parties indicate that the ’517 patent is involved in *United Services Automobile Association v. Wells Fargo Bank N.A.*, No. 2:18-CV-00245-JRG (E.D. Tex., filed Jun. 7, 2018). Pet. 65; Paper 4, 2. The ’517 patent also was the subject of a petition under the transitional program for covered business

IPR2019-1081
Patent 9,336,517 B1

method patents (“CBM”). *See Wells Fargo Bank N.A. v. United Servs. Auto. Ass’n*, CBM2019-00003, Paper 25 (PTAB June 3, 2019) (Denying Institution).

In addition, Petitioner filed other petitions challenging the patentability of certain subsets of claims in the following patents owned by Patent Owner: (1) U.S. Patent No. 9,818,090 B1 (CBM2019-00002 and IPR2019-00815); (2) U.S. Patent No. 8,977,571 B1 (CBM2019-00004 and IPR2019-01082); (3) U.S. Patent No. 8,699,779 B1 (CBM2019-00005 and IPR2019-01083); (4) U.S. Patent No. 9,224,136 B1 (CBM2019-00027); (5) U.S. Patent No. 10,013,681 B1 (CBM2019-00028); (6) U.S. Patent No. 10,013,605 B1 (CBM2019-00029). *See* Paper 4, 2–3; Paper 35, 1–3.

We dismissed the petition and terminated the proceeding in CBM2019-00002, we denied the petition because the involved patent was not eligible for covered business method patent review in each of CBM2019-00003, CBM2019-00004, CBM2019-00005, CBM2019-00027, CBM2019-00028, and CBM2019-00029, and we denied the petition on the merits in IPR2019-00815. *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass’n*, CBM2019-00002, Paper 16 (PTAB Apr. 26, 2019) (Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass’n*, CBM2019-00003, Paper 25 (PTAB June 3, 2019) (Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass’n*, CBM2019-00004, Paper 22 (PTAB May 15, 2019) (Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass’n*, CBM2019-00005, Paper 25 (PTAB June 3, 2019) (Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass’n*, CBM2019-00027, Paper 13 (PTAB Oct. 1, 2019) (Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass’n*,

CBM2019-00028, Paper 14 (PTAB Oct. 1, 2019) (Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass’n*, CBM2019-00029, Paper 13 (PTAB Oct. 1, 2019) (Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass’n*, IPR2019-00815, Paper 17 (PTAB Aug. 26, 2019) (Denying Institution). Final Written Decisions have been entered for two additional *inter partes* reviews between these parties regarding related patents: 8,977,571 B1 (IPR2019-01082, Paper 39) and 8,699,779 B1 (IPR2019-001083, Paper 41).

B. The '517 Patent

The '517 patent is titled “Systems and Methods For Alignment Of Check During Mobile Deposit.” Ex. 1001, code (54). Figure 1 of the '517 patent is reproduced below.

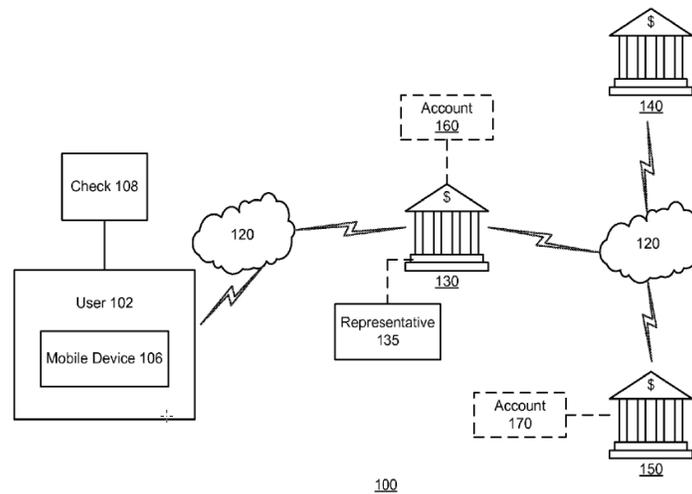


Figure 1 above illustrates a system “in which example embodiments and aspects may be implemented.” *Id.* at 2:55–57. As shown in Figure 1, system 100 includes an account owner (user 102) and financial institutions 130, 140, 150 (e.g., banks), communicating with each other via networks 120 (e.g., the Internet). *Id.* at 2:57–64, 3:16–34. User 102 may deposit

check 108 in account 160 and financial institution 130 may process and clear check 108. *Id.* at 3:20–22. For example, after endorsing check 108, user 102 uses mobile device 106 that includes a camera to convert check 108 into a digital image by taking a picture of the front and/or back of check 108. *Id.* at 3:57–60.

The '517 patent recognizes that “depositing a check typically involves [a payee] going to a local bank branch and physically presenting the check to a bank teller.” Ex. 1001, 1:30–35. Thus, “[t]o reduce such burdens for the payee, systems and methods have been developed to enable the remote deposit of checks.” *Id.* at 1:35–37. The '517 patent states:

For example, the payee may capture a digital image of a check using a mobile device. The financial institution may then receive from the payee the digital image of the check. The financial institution may then use the digital image to credit funds to the payee.

Id. at 1:38–42. The '517 patent, however, recognizes that “such a technique requires the efficient and accurate detection and extraction of the information pertaining to a check in the digital image” and that “[c]apturing a digital image at a mobile device that allows for detection and extraction of the information from the digital image is difficult.” *Id.* at 1:42–47. In addition, the '517 patent discloses that electronically exchanging a check image requires compliance with the “Check 21 compliant format.” *Id.* at 9:5–8. The Specification explains that:

The Check Clearing for the 21st Century Act (or Check 21 Act) is a United States federal law that allows the recipient of a paper check to create a digital version, thereby eliminating the need for further handling of the physical document. The Check 21

standard for electronic exchange is defined in the standard DSTU X9.37-2003 (“X9.37”). It is a *binary interchange format*.

Id. at 9:9–15 (emphasis added).

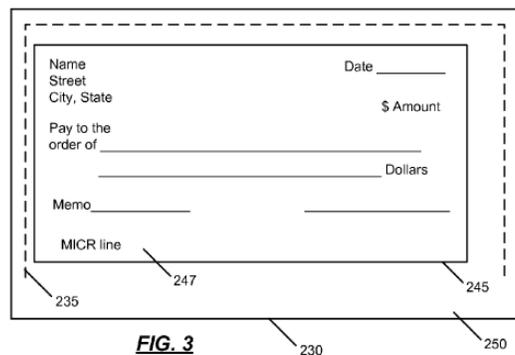
The Specification discloses an invention wherein:

An alignment guide may be provided in the field of view of a camera associated with a mobile device used to capture an image of a check. *When the image of the check is within the alignment guide in the field of view, an image may be taken by the camera and provided from the mobile device to a financial institution.* The check may be deposited in a user’s bank account based on the image.

Id. at 1:51–57 (emphasis added).

The Specification explains that “[t]o *increase the likelihood of capturing a digital image of the check 108 that may be readable and processed* such that the check 108 can be cleared, an alignment guide may be provided in the field of view of the camera of the mobile device 106.” *Id.* at 3:66–4:3 (emphasis added).

Figure 3 of the ’517 patent is reproduced below.



As shown in Figure 3 above, image 230 comprises check image 247, background image 250, and alignment guide 235. *Id.* at 6:12–14. Image 230 may be provided in the field of view of the camera during image capture of the check. *Id.* at 6:24–25. The user may move the camera or the

check so that check image 247 appears within or lines up with alignment guide 235. *Id.* at 6:25–28.

The Specification states that “[t]he alignment guide may provide a pre-image capture quality check that *helps reduce the number of non-conforming images of checks during presentment* of the images to a financial institution for processing and clearing.” *Id.* at 4:10–13 (emphasis added). The Specification also explains that:

The alignment guide may be provided during image capture to assist the user 102 in positioning the check 108 so that the image of the check 108 may be captured in such a manner that it may be *more easily processed and cleared during subsequent operations, such as those involving one or more financial institutions.*

Id. at 5:53–59 (emphasis added).

[T]he software object may capture the image of the check 108 and transmit that image to the server 322 that in turn may perform those operations, *verifies that the image quality is within acceptable thresholds*, and communicates that verification back to the client 320, which can then instruct the user 102 to take a picture of the other side of the check 108.

Id. at 8:66–9:4 (emphasis added).

The Specification describes the following about a disclosed implementation:

At 960, when the image of the check is within the alignment guide, a digital image of the check may be created using the camera. In an implementation, the user may instruct the camera (e.g., by pressing a button on the camera or the mobile device) to create the digital image. In another implementation, the camera may automatically create the digital image as soon as the image of the check is within the alignment guide. In this manner, the user may point the camera at the check such that the

image of the check appears in the field of view, and after the alignment guide has been adjusted (either by the user or automatically by the camera, the mobile device, or the financial institution via a communications network) and/or the check has been repositioned within the alignment guide by the user, a digital image of the check may be created without further user intervention.

Id. at 15:19–33.

C. Illustrative Claim

Of the challenged claims, claims 1 and 10 are independent. Claims 5–9 depend from claim 1, and claims 12–14 and 17–20 depend from claim 10. Claim 1 is illustrative and is reproduced below.

1. A system, comprising:

a mobile device having a processor, wherein the processor is configured to:

generate an alignment guide adapted to align with an instrument, wherein the alignment guide is associated with an information capture component, wherein the information capture component is associated with the mobile device, and wherein the mobile device is adapted to capture information of the instrument;

monitor at least one feature of the instrument detected by the information capture component;

determine whether the at least one feature of the instrument aligns with the alignment guide;

automatically capture information of the instrument when the at least one feature aligns with the alignment guide; and

transmit the captured information from the mobile device to a server via a communication pathway between the mobile device and the server.

Ex. 1001, 18:49–67.

D. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability (Pet. 23)¹:

Claim(s) Challenged	35 U.S.C. §	Reference(s)
1, 5, 6, 9, 10, 12, 13, 18–20	103	Nepomniachtchi, ² Yoon ³
7, 8, 14, 17	103	Nepomniachtchi, Yoon, Cho ⁴

II. ANALYSIS

A. Level of Ordinary Skill in the Art

To determine whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). The resolution of this question is important because it allows us to “maintain[] objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). In assessing the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quotation omitted). Generally, it is easier to establish obviousness under a higher level of

¹ For purposes of this Decision, we assume the claims at issue have an effective filing date prior to March 16, 2013, the effective date of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), and we apply the pre-AIA version of 35 U.S.C. § 103.

² U.S. Pat. No. 7,778,457 B2 (Ex. 1003, “Nepomniachtchi”).

³ U.S. Pat. App. No. 2007/0262148 A1 (Ex. 1005, “Yoon”).

⁴ U.S. Pat. No. 7,120,461 B2 (Ex. 1033, “Cho”).

ordinary skill in the art. *Innovention Toys, LLC v. MGA Entm't, Inc.*, 637 F.3d 1314, 1323 (Fed. Cir. 2011) (“A less sophisticated level of skill generally favors a determination of nonobviousness . . . while a higher level of skill favors the reverse.”).

Here, we initially adopted Petitioner’s description of a person of ordinary skill in the art. Dec. 28–29. Petitioner asserts that, as of August 2009, a person of ordinary skill in the art would have been a person having at least a bachelor’s degree in electrical engineering, computer science, or computer engineering, or equivalent, and at least two years of experience with image scanning technology involving transferring and processing of image data to and at a server. Pet. 11 (citing Ex. 1002 ¶ 15). Patent Owner does not dispute this description and “applies this level of ordinary skill in the art.” PO Resp. 23 (citing Dec. 29). We note that Petitioner’s assessment appears consistent with the level of ordinary skill in the art at the time of the invention as reflected in the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Based on our review of the complete record, we agree with Petitioner’s assessment and maintain the decision to adopt Petitioner’s description of the level of skill in the art.

B. Claim Construction

In an *inter partes* review proceeding, a patent claim shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (as amended Oct. 11, 2018). This rule adopts the same claim construction standard used by Article III federal courts, which follow *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and its

progeny. Under this standard, the words of a claim are generally given their “ordinary and customary meaning,” which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *See Phillips*, 415 F.3d at 1312–13.

Petitioner asserts that the parties disagree on the construction of several claim terms in the related district court proceeding. Pet. 12–13 (citing Ex. 1034, 8–9; Exs. 1035–1037 (the parties’ district court claim construction briefs)). Petitioner addresses directly the claim terms “identification information pertaining to the instrument” and “determin[ing] whether the at least one feature of the instrument aligns with the alignment guide.” *Id.* at 13–17. Further, Petitioner addresses an alleged “obvious drafting error in dependent claim 12.” *Id.* at 17–19. Ultimately, Petitioner asserts that the parties’ claim construction disputes do not affect the outcome of this Petition with respect to any claim. *Id.* at 12, 15, 18, 19.

In our Institution Decision, we construed “identification information pertaining to the instrument” and “determin[ing] whether the at least one feature of the instrument aligns with the alignment guide,” and declined to address the alleged drafting error in dependent claim 12. Dec. 22–28. In its Response, Patent Owner addresses the claim terms “mobile device” and “determin[ing] whether the at least one feature of the instrument aligns with the alignment guide.” PO Resp. 23–29. On Reply, Petitioner asserts that no construction is necessary for either of the phrases addressed in the Patent Owner Response and reiterates its request that we address the alleged drafting error in claim 12. Reply 1–6. According to Petitioner, these claim

construction disputes are not dispositive, but it asserts that our analysis may be streamlined if the terms are construed. Tr. 6:13–16.

Based on this entire trial record, we find that it is unnecessary to construe any claim term for purposes of this Final Written Decision. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

C. Overview of the Asserted Prior Art

1. Nepomniachtchi (Exhibit 1003)

Nepomniachtchi discloses methods and systems for mobile image capture and processing of checks. Ex. 1003, code (54), Abstract. Nepomniachtchi teaches that the “mobile image capture and processing systems and methods may be used with a variety of documents, including financial documents such as personal checks, business checks, cashier’s checks, certified checks, and warrants.” *Id.* at 6:6–9. According to Nepomniachtchi, by capturing and using an image of a check, “the check clearing process is performed more efficiently.” *Id.* at 6:9–11. Nepomniachtchi discloses that “[b]efore a check amount is deducted from a payer’s account, the amount, account number, and other important information must be extracted from the check,” and that “[t]his highly automated form of extraction is done by a check processing control system that captures information from the Magnetic Ink Character Recognition (‘MICR’) line . . . that [is] printed on the bottom of a check using magnetic ink.” *Id.* at 1:25–32.

Nepomniachtchi also discloses that many different factors may affect the quality of an image. *Id.* at 7:4–6. For example, optical defects, such as

out-of-focus images, unequal contrast or brightness, or other optical defects, might make it difficult to process an image of a document (e.g., a check, payment coupon, deposit slip, etc.). *Id.* at 7:6–10. “The quality of an image may also be affected by *the document position* on a surface when photographed or *the angle* at which the document was photographed,” and “[t]his affects the image quality by causing the document to appear, for example, *right side up, upside down, skewed, etc.*” *Id.* at 7:10–14 (emphases added). According to Nepomniachtchi, a “document image taken using a mobile device might have one or more of the defects discussed,” and “[i]f the quality of an image is determined to be poor, a user may be prompted to take another image.” *Id.* at 7:51–59.

Figure 7 of Nepomniachtchi is reproduced below.

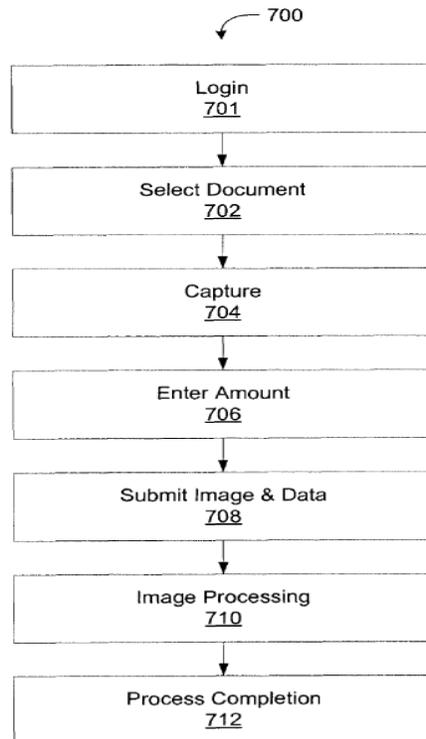


Figure 7 of Nepomniachtchi above illustrates a flowchart of an example method. *Id.* at 9:23–24. In operation 701, a user logs into a

document capture system on a mobile device. *Id.* at 9:25–26. In operation 702, the user selects the type of document for a check, payment coupon, or deposit slip. *Id.* at 9:33–35. In operation 704, an image is captured. *Id.* at 9:41. The application running on the mobile device may prompt the user to take a picture of the front and back of the check. *Id.* at 9:41–50. The application also conducts image processing to determine if the quality of the image is sufficient for further processing. *Id.* at 9:50–54. At operation 706, an amount is entered. *Id.* at 9:58–59. In some embodiments, the system determines the amount by processing the image using optical character recognition (“OCR”). *Id.* at 9:64–10:8. In operation 708, the image is transmitted to a server, and the server confirms that the image was received by transmitting a message back to the mobile device. *Id.* at 10:9–15.

In operation 710, image processing is performed, in which the server cleans up the image by “performing auto-rotate, de-skew, perspective distortion correction, cropping, etc.” *Id.* at 10:16–19. The server also processes the image to produce a bi-tonal image for data extraction. *Id.* 10:19–20. In some embodiments, some or all data processing might be performed at the mobile device. *Id.* at 10:21–22. And “in some embodiments, a server based implementation might be employed to off-load processing demands from the mobile device.” *Id.* at 10:54–56. “Additionally, in some cases it might be quick as or quicker than a system that uses the mobile communication device to process an image to determine image quality.” *Id.* at 10:56–59.

In operation 712, the processing of the document is completed. *Id.* at 10:29–30. When the server has confirmed that all necessary data can be extracted from a received image, it transmits a status message to the mobile

device. *Id.* at 10:30–33. However, “if some necessary data cannot be extracted, the server may transmit a request for additional data,” including a request for an additional image. *Id.* at 10:33–36.

2. *Yoon (Exhibit 1005)*

Yoon is a U.S. patent application publication titled “Apparatus and Method for Photographing a Business Card in Portable Terminal.” *Ex. 1005*, code (54). According to *Yoon*, at the time of its invention, portable terminals were “capable of photographing a business card using a camera, and providing a business card recognition function.” *Id.* ¶ 6. *Yoon* teaches that “[i]n the business card recognition function, the probability of satisfactorily recognizing the business card in order to obtain the information contained in the business card varies depending on photographing conditions, such as the size, brightness, and image quality of the photographed business card.” *Id.* ¶ 7.

Yoon teaches “an apparatus and method for allowing a business card to be automatically photographed by detecting the boundary lines of the business card.” *Id.* ¶ 3. *Yoon*’s Figure 1 is set forth below.

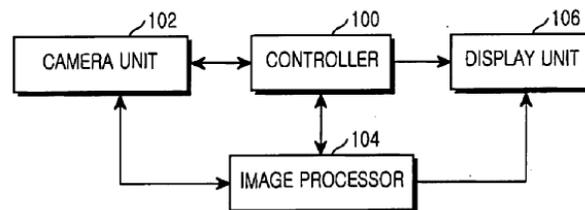


Figure 1 shows a block diagram of a portable terminal that includes controller 100, camera unit 102, image processor 104, and display unit 106. *Id.* ¶ 19. Controller 100 displays on “display unit 106 reference boundary lines, for presenting a size and location, of a business card, which are appropriate for recognizing the business card.” *Id.* Controller 100 also

“determines whether the boundary lines of the business card received from the image processor 104 coincide with the reference boundary lines.” *Id.*

Figures 3A–3D of Yoon are reproduced below (with green highlighting added).

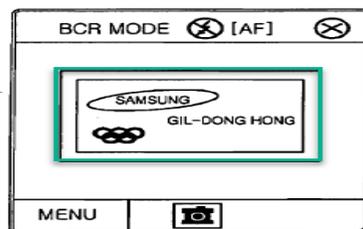


FIG. 3A

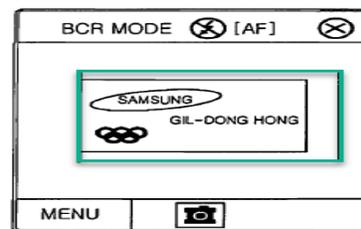


FIG. 3B

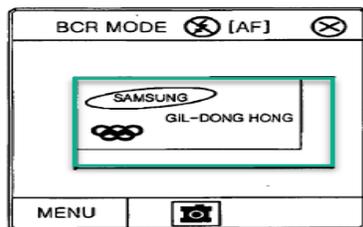


FIG. 3C

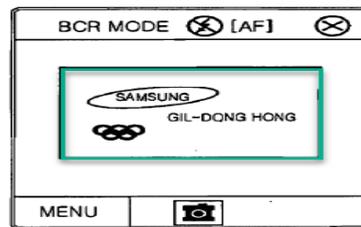


FIG. 3D

As shown in Figure 3A–3D of Yoon above, the *reference boundary lines* (highlighted in green) “for presenting a size and location of a business card, which are appropriate for recognizing the business card, are displayed as a *rectangular frame* in the center of the display unit 106.” *Id.* ¶¶ 24–28 (emphasis added). Figure 3A above (left top) depicts the business card located inside the reference rectangular frame. *Id.* ¶ 24. Figure 3B above (right top) illustrates the situation in which one of the boundary lines of the business card coincides with the left reference boundary line. *Id.* ¶ 27. Figure 3C above (left bottom) shows the situation in which the boundary lines of the business card coincide with the left and upper reference boundary lines. *Id.* Figure 3D above (right bottom) shows the situation in

which all of the boundary lines of the business card coincide with all of the reference boundary lines. *Id.* ¶ 28.

Yoon teaches that once “all the reference boundary lines completely coincide with the boundary lines of the business card,” the portable terminal “displays a message informing the user of the start of automatic photographing for the business card” and “performs auto focusing in order to photograph the business card.” *Id.* ¶¶ 28–29. After auto focusing, the portable terminal checks again whether all of the reference boundary lines “still coincide with all the boundary lines of the business card.” *Id.* ¶ 29. If so, the portable terminal photographs the business card. *Id.*

3. *Cho (Exhibit 1033)*

Cho discloses a camera phone and photographing method for a camera phone. Ex. 1033, Abstract. According to Cho, “[i]n the conventional art camera phone, it takes a long time to set up a composition of a subject because the user must move the camera phone to and fro in order to set up the composition of the subject.” *Id.* at 1:35–39. To solve this problem, Cho teaches “displaying a composition guideline on a display unit of a device and photographing a subject through the displayed composition guideline.” *Id.* at 1:59–65.

Figure 1 of Cho is reproduced below.

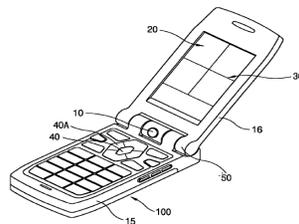
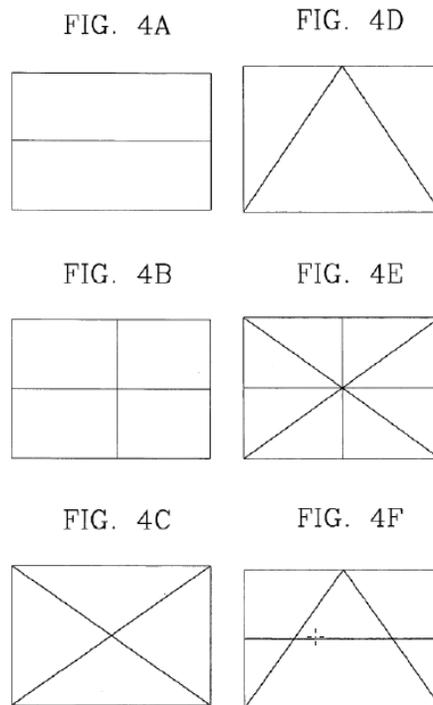


Figure 1 above shows camera phone 100 comprised of main body 15, flap 16, input device 40, and display unit 20. *Id.* at 2:57–67. Composition

guideline 30 is provided on display unit 20. *Id.* at 2:65–67. “A user can select a variety of different composition guidelines,” which “may be provided in a menu (not shown) from which the user can then select a desired composition guideline, or a standard composition guideline may be initially displayed which the user may then adjust.” *Id.* at 2:67–3:5. “For example, a user may adjust a type, shape and/or color of the composition guideline using the input device 40, according to user preferences,” so that the “user can precisely and easily photograph a subject through the composition guideline.” *Id.* at 3:9–14.

Figures 4A–4F of Cho are reproduced below.



Figures 4A–4F above illustrate exemplary types of composition guidelines, which may be selected using a composition guideline selecting menu of a photographing menu of the camera phone. *Id.* at 3:65–4:2.

“[N]umerous other useful types and/or combinations could be employed.”

Id. at 4:13–14.

D. Asserted Obviousness over Nepomniachtchi and Yoon

Petitioner asserts that claims 1, 5, 6, 9, 10, 12, 13, and 18–20 are unpatentable under § 103(a) as obvious over Nepomniachtchi and Yoon, citing the Declaration of Dr. Peter Alexander for support. Pet. 27–54 (citing Ex. 1002). Patent Owner counters that Petitioner fails to articulate a sufficient reason to combine the teachings of Nepomniachtchi and Yoon. PO Resp. 29–51.

1. Independent Claims 1 and 10

We will address independent claims 1 and 10 together because the limitations of these claims are substantially similar. *See* Ex. 1001, 18:49–67, 19:29–41. As to these claims, Petitioner alleges that one of ordinary skill in the art would have found them to be obvious over the teachings of Nepomniachtchi and Yoon. *See* Pet. 31–44, 48–50.

As to the preamble of claim 1 “[a] system” and the limitation “a mobile device having a processor,” as recited in claim 1, and “[a]” non-transitory computer-readable medium comprising instructions executed by a processor of a mobile device, as recited in claim 10, Petitioner asserts that Nepomniachtchi teaches using a mobile device to capture and process an image of “a check that is to be deposited,” and “[t]he mobile device could be a ‘mobile telephone handset, Personal Digital Assistant, or other mobile communication device.’” *Id.* at 31–33, 48–49 (citing Ex. 1003, 6:19–24, 6:50–53).

As to the limitation “generat[ing] an alignment guide adapted to align with an instrument, wherein the alignment guide is associated with an information capture component, wherein the information capture component

is associated with the mobile device, and wherein the mobile device is adapted to capture information of the instrument,” as recited in claim 1, Petitioner relies upon Yoon to teach an alignment guide. *Id.* at 36–37. In particular, Petitioner notes that Yoon teaches that “the controller 100 displays on the display unit 106 reference boundary lines, for presenting a size and location, of a business card, which are appropriate for recognizing the business card.” *Id.* (citing Ex. 1005 ¶¶ 19, 22, 24, Fig. 2 (step 203), Fig. 3A). With respect to the recited “information capture component [being] associated with the mobile device,” and “the mobile device [being] adapted to capture information of the instrument,” Petitioner points out that Nepomniachtchi teaches “that the mobile device used to capture an image of the check ‘may include a camera,’” and that “the mobile device could use optical character recognition to extract information, such as the check amount, from the check image.” *Id.* at 34 (citing Ex. 1003, 6:19–24, 9:64–10:3, 10:21–22).

With respect to the limitation “monitor[ing] at least one feature of the instrument detected by the information capture component,” as recited in claim 1, and “monitor[ing] at least one feature of an instrument that is within a field of view of a camera associated with the mobile device, wherein the mobile device is adapted to capture information of the instrument,” as recited in claim 10, Petitioner asserts that Yoon teaches “monitoring the face or edges of an image of a business card” and “determin[ing] whether the boundary lines of the business card received from the image processor . . . coincide with the reference boundary lines.” *Id.* at 37–38, 49–50 (citing Ex. 1005 ¶ 19, Fig 2).

For the limitation “determin[ing] whether the at least one feature of the instrument aligns with the alignment guide,” as recited in claim 1, and “determin[ing] whether the at least one feature aligns with an alignment guide adapted to align with an instrument,” as recited in claim 10, Petitioner asserts Yoon teaches “determining whether the face or edges of an image of a business card align[s] with rectangular reference boundary lines displayed on the portable terminal’s display.” *Id.* at 38–39, 49–50 (citing Ex. 1005 ¶ 19, Fig. 2 (steps 211, 215, 225)).

Regarding the limitation “automatically captur[ing] information of the instrument when the at least one feature aligns with the alignment guide,” as recited in claim 1 and similarly recited in claim 10, Petitioner relies upon Yoon to teach that its controller 100 “determines whether the boundary lines of the business card received from the image processor 104 coincide with the reference boundary lines,” and “[i]f they coincide with one another, the controller 100 controls automatic photographing to be performed.” *Id.* at 40–41, 49–50 (citing Ex. 1005 ¶ 19, Fig. 2 (step 223), Fig. 3D).

For the limitation “transmit[ting] the captured information from the mobile device to a server via a communication pathway between the mobile device and the server,” as recited in claim 1, and “transmit[ting] the captured information from the mobile device to a server,” as recited in claim 10, Petitioner relies upon Nepomniachtchi to teach transmitting the captured image of a check from the mobile device to a server via a communication pathway. *Id.* at 41–42, 49–50 (citing Ex. 1003, 6:28–33, 9:41–57, Fig. 7).

In addition, Petitioner asserts that a person of ordinary skill in the art “would have been motivated to combine Nepomniachtchi and Yoon so that a mobile device would automatically capture information of an instrument

using Yoon’s alignment guide.” *Id.* at 42. Petitioner acknowledges that Nepomniachtchi does not teach “projecting an alignment guide in the display of the mobile device, monitoring the alignment of the check with the alignment guide, and automatically capturing an image of the check when it was aligned with the alignment guide.” *Id.* Petitioner contends that Yoon teaches “using a mobile device to perform all of these steps when capturing the image of a business card.” *Id.* Petitioner also contends that a person of ordinary skill in the art “would have understood that Yoon’s teachings would apply to capturing images of checks as well as business cards.” *Id.* (citing Ex. 1002 ¶ 112).

Petitioner contends that Nepomniachtchi taught two methods to deal with low quality images. *Id.* at 43. “The first solution was to detect whether the image was of poor quality and prompt[] the user to take another image. The second solution was to process the image to correct the defect.” *Id.* (citing Ex. 1003, 7:55–59, 8:54–63) (internal citations omitted). Petitioner asserts that a person of ordinary skill in the art “would have recognized that one way to minimize the need for the geometrical correction algorithm or prompting user to retake the photo would be *to ensure that the check was properly aligned* with the camera of the mobile phone when the picture of the check was taken.” *Id.* at 43 (citing Ex. 1002 ¶ 115) (emphasis added). Petitioner contends that an ordinarily skilled artisan would have been led “to investigate ways *to ensure checks were well-aligned* with the camera when images were being taken,” and that such an artisan “would have found Yoon, which [teaches] techniques to reduce the variance in ‘satisfactorily recognizing the business card in order to obtain the information contained in the business card.’” *Id.* at 43–44 (citing Ex. 1005 ¶ 7) (emphasis added).

Petitioner further contends that an ordinarily skilled artisan “would have understood that the alignment of the image was important when capturing the image of a check and that while it may be possible to correct a skewed image with image processing, that processing was computationally intensive.” *Id.* at 43 (citing Ex. 1002 ¶¶ 113–114). Petitioner argues that the person of ordinary skill in the art “seeking to obtain better images of checks would have been motivated to add to Nepomniachtchi the techniques of Yoon to solve for checks the same problems Yoon solved for business cards.” *Id.* at 44 (citing Ex. 1002 ¶ 115); *see* Ex. 1005 ¶ 7 (noting that Yoon sought to solve the problem that “the business card may be photographed to be too large, small or dark, thereby lowering the probability of satisfactorily recognizing the business card.”). Petitioner contends that such an artisan “therefore would have been motivated to combine Nepomniachtchi’s mobile phone check imaging embodiment with Yoon’s techniques for aligning a document with a mobile device camera *to obtain a good, well-aligned photograph of a document.*” *Id.* (emphasis added).

Patent Owner asserts that the challenges based on the combination of Nepomniachtchi and Yoon must fail because Petitioner has not established a sufficient motivation to combine the teachings of these references. *See* PO Resp. 29–51. Based on the totality of this entire trial record, we agree with Patent Owner that Petitioner does not articulate an adequate reason to combine the teachings of Nepomniachtchi and Yoon.

a) Yoon Would Not Reduce Computational Burden

Petitioner argues that a person of ordinary skill in the art “would have understood that the alignment of the image was important when capturing the image of a check and that while it may be possible to correct a skewed

image with image processing, that processing was *computationally intensive*” and that such an artisan “would be motivated to *minimize the need for this algorithm*” in Nepomniachtchi. Pet. 42–43 (citing Ex. 1002 ¶¶ 113–114) (emphases added). Dr. Alexander supports this argument by testifying that a person of ordinary skill in the art “would have understood that excessive computation performed on a mobile device would necessarily lead to slower than desirable response times and potential user dissatisfaction.” Ex. 1002 ¶ 114. He further opines that “Yoon presented a viable means of *reducing the burden of computations performed by the mobile device.*” *Id.* ¶ 115 (emphasis added). Petitioner further asserts that “[Patent Owner] confuses the similar computational burdens in analyzing image quality with the vastly different computational burdens in improving image quality.” Reply 10. We disagree. Patent Owner does not contend that “the computational efficiency analysis step would be essentially the same for Yoon or Nepomniachtchi” (*see* Reply 10), but rather, that “[Petitioner] cannot assert that Yoon teaches a different way of assessing image alignment that is more efficient, or requires less analysis, than Nepomniachtchi’s technique” (*see* PO Resp. 33).

Patent Owner further argues that most likely the combination would *increase* the computational burden on the mobile device. PO Resp. 32–40; Sur-reply 10–14; Ex. 2032 ¶ 30. Patent Owner contends that moving the alignment analysis to the pre-capture phase would dramatically increase the computational burden because “Nepomniachtchi’s processing/analysis is performed on a single check image taken by the user. Pre-capture image quality analysis, on the other hand, would need to be performed thirty times or more *per second* in order to determine when to automatically capture the

check image (as well as determining what feedback instructions to provide).” PO Resp. 37 (citing Ex. 2032 ¶ 30). Petitioner contends that the cited art does not require that this analysis happens thirty times per second and that there is “no reason why a [person of ordinary skill] could not design the system to examine one single frame to provide feedback to the user.”

Reply 13. Patent Owner argues that

[i]n the proposed combination, however, the image quality would *also* need to be analyzed prior to image capture to determine whether the check image was aligned with the alignment guide and trigger the automatic capture process. *See* Ex. 2032 ¶ 30. As Mr. Mott’s declaration explains, this pre-capture analysis would need to be performed repeatedly for the processor to decide when to capture the check image, since it can no longer rely on the user initiating “manual capture.” *Id.* As a result, “pre-capture check image quality analysis is more computationally intensive than post-capture check image quality analysis.” *Id.*

Sur-Reply 13. Patent Owner identifies that Petitioner’s declarant did not rebut Mr. Stephen Mott’s analysis as to this point. *Id.* at 14. Patent Owner also argues that Petitioner fails to provide a motivation to support its mention of a possible alternative design that examines one frame at time. *Id.* Patent Owner asserts that such a design would be “nonsensical” because “the system would be incapable of capturing a check image except in the rare situation where the very first analyzed frame satisfied the alignment check.” *Id.* We agree that a discussion of motivation to make such a modification is required. Obviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed inventions.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015). The Petition does not

propose to modify Nepomniachtchi's system to examine one single frame to provide feedback to the user, much less articulate a motivation to make such a modification. *See* Pet. 33–41, 51–52.

We find Patent Owner's arguments and evidence to comport with the disclosures of the references. Yoon states that “[t]he image processor 104 processes the digital data received from the camera unit 102 *in units of frames*, and outputs the result of processing to be appropriate.” Ex. 1005 ¶ 21 (emphasis added); *see* Ex. 1003 ¶¶ 84, 128, 139 (each citing Ex. 1005 ¶ 21). Yoon's controller does not allow automatic photography to begin until after the system has determined that the image is sufficiently bright and appropriately aligned. Ex. 1005 ¶¶ 19, 26, 28. Thus, Yoon's system is performing a pre-capture analysis on “units of frames” in order to ascertain whether the image is appropriate for capture. *Id.*

Petitioner, however, is correct that there is no requirement that this analysis happen thirty times per second, but as Mr. Mott points out “[i]n order to determine when to capture the check image, the system would have to monitor, in realtime, the quality of the check image in view.” Ex. 2032 ¶ 30. Mr. Mott does not describe a frequency of thirty frames per second as a requirement, but rather just an example of the high frequency in which this analysis would have to be performed. *Id.* (“[P]re-capture check image quality analysis is more computationally intensive than post-capture check image quality analysis, because it must be performed repeatedly (for example, 30 times per second, when analyzing a 30 frames-per-second live camera preview), as opposed to analyzing a single, captured check image.”). Thus, the proposed system would include some number of iterations of the pre-capture analysis in order to obtain a well-aligned image. It stands to

reason that the number of iterations would generally be greater than one because if it were typical for checks to be immediately well aligned then there would be little incentive to improve alignment in the first place. Neither Petitioner nor Dr. Alexander explains sufficiently how adding Yoon's monitoring and capturing features on Nepomniachtchi's mobile device would avoid increasing the computational burden on the mobile device. Pet. 42–44; Ex. 1002 ¶¶ 111–115. As discussed above, we agree with Mr. Mott's testimony that such a modification would increase computational burden on the mobile device. Ex. 2032 ¶ 30. Therefore, we are not persuaded by Petitioner's argument that “[i]t is not true that combining Nepomniachtchi and Yoon would necessarily increase the computational burden on the mobile device.” Reply 12.

Petitioner asserts that “the combination [of Nepomniachtchi and Yoon] lowers the burden of the [post-capture] correction step” so that it would reduce the burden of the computation performed by the *mobile device*. Reply 10–14; *see also* Pet. 39–41; Ex. 1002 ¶¶ 110–113. Nepomniachtchi, however, teaches that “the *server* may clean up the image by performing auto-rotate, de-skew, perspective distortion correction, cropping, etc.” and that “a *server* based implementation might be employed to off-load processing demands from the mobile device.” Ex. 1003, 10:17–20, 10:55–56. Thus, any reduction in the correction processing would result in an efficiency gain at the *server*, not the mobile device.

We recognize that Nepomniachtchi also states that “[i]n other embodiments, some or all data processing might be performed at the mobile communication device.” Ex. 1003, 10:21–22. The Petition, however, fails to reference this passage in its discussion of the motivation to combine.

Pet. 42–44. In its Reply, there is some suggestion that Nepomniachtchi’s correction processing is performed on the mobile device. Reply 10–14. We must, however, ascertain whether this is a new argument that should not be considered in this proceeding. Petitioner cites this passage twice in its discussion of claim 1. First, Petitioner cites it to support an assertion that “Nepomniachtchi disclosed using a mobile device to deposit a check.” Pet. 27 (citing Ex. 1003, 6:19–20, 6:50–53, 10:21–26). Second, Petitioner cites that passage to support an assertion that “Nepomniachtchi also taught that the mobile device could use optical character recognition to extract information, such as the check amount, from the check image.”⁵ *Id.* (citing Ex. 1003, 9:64–10:3, 10:21–22). Thus, there is no argument in the Petition that Nepomniachtchi’s post-capture image correction steps would have been performed on this mobile device. Petitioner had an opportunity to present argument as to why a relevant artisan would have used the mobile device to perform the correction processing, or to identify the specific embodiment disclosed in Nepomniachtchi that supports its argument, but chose not to do so in the Petition.

As the Supreme Court of the United States has explained, “the petitioner is master of its complaint,” and the statute “makes the petition the center-piece of the proceeding both before and after institution.” *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1355, 1358 (2018). “It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify ‘with particularity’ the ‘evidence that supports the grounds for the challenge to each claim.’” *Intelligent Bio-Sys*,

⁵ A similar argument is made as to claim 5. *See* Pet. 44–46.

Inc. v. Illumina Cambridge Ltd., 821 F.3d 1359, 1369 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3)); *see also Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 775 (Fed. Cir. 2018). “All arguments for the relief requested in a motion must be made in the motion. A reply may only respond to arguments raised in the corresponding opposition . . . or patent owner response.” 37 C.F.R. § 42.23(b). A reply that “raises a new issue or belatedly presents evidence may not be considered.” Patent Trial and Appeal Board Consolidated Trial Practice Guide (“CTPG”)⁶ 74 (Nov. 2019); *see also* 84 Fed. Reg. 64,280 (Nov. 21, 2019). Accordingly, we decline to consider Petitioner’s new argument that Nepomniachtchi’s correction processing is performed on the mobile device.

More importantly, neither Petitioner nor Dr. Alexander articulates a reason to use the *mobile device*, instead of the *server*, to perform the correction processing. Pet. 42–44; Ex. 1002 ¶¶ 111–115. Instead, Dr. Alexander characterizes the correction processing as “computationally intensive” and admits that a person of ordinary skill in the art “would have understood that excessive computation performed on *a mobile device* would necessarily lead to slower than desirable response times and potential user dissatisfaction.” Ex. 1002 ¶ 114 (emphasis added). Moreover, Patent Owner’s declarant testifies that “unlike pre-capture analysis [in Yoon], post-capture analysis [in Nepomniachtchi] may be off-loaded to a remote server in order to minimize the computational burden on the mobile device.” Ex. 2032 ¶ 30 (citing Ex. 1003, 10:54–59). Based on Nepomniachtchi, Dr. Alexander’s testimony, and Mr. Mott’s testimony, a relevant artisan

⁶ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

would have used the *server* to perform the correction processing, instead of the mobile device, in order to avoid excessive burden on the mobile device, slower response times, and user dissatisfaction. Ex. 1003, 10:17–20, 10:54–67; Ex. 1002 ¶ 112; Ex. 2032 ¶ 30.

In its Reply, Petitioner also argues that “[i]t also does not matter that Nepomniachtchi taught offloading computation to a server” because “Nepomniachtchi teaches away from its server embodiment,” citing Dr. Alexander’s deposition testimony for support. Reply 12 (Ex. 2039, 88:2–19 (stating that “the disadvantage of doing it on the server is that the user performing the image capture may no longer be available”)).

Petitioner’s argument improperly conflates the image quality analysis with the correction processing for the image. Petitioner admits that “[i]t is undisputed that Nepomniachtchi teaches a two-part algorithm where the first part ‘performs a detailed image quality analysis’ and the second part ‘processes the image to correct defects.’” *Id.* at 10. Petitioner’s motivation to combine the references rests on the premise that “the combination lowers the burden of the *correction step*.” *Id.* (emphasis added). Petitioner fails to recognize that Dr. Alexander’s deposition testimony and the portion of Nepomniachtchi cited by Dr. Alexander are directed to the image quality analysis, not the correction processing. Ex. 2039, 88:2–19 (stating that “he says at column 10, line 40, ‘In some embodiments the quality of the image is determined at the mobile device’”); Ex. 1003, 10:40–41 (disclosing “the quality of the image is determined at the mobile device”). Neither Dr. Alexander’s testimony nor the cited portion of Nepomniachtchi teaches away from performing the *correction processing* on the server, as Petitioner alleges. As Patent Owner points out, “[t]here is no suggestion whatsoever in

Nepomniachtchi that performing image *correction* on the server is disadvantageous.” Sur-reply 11.

Furthermore, Petitioner ignores Nepomniachtchi’s teachings that “[i]t will be understood, however, that in some embodiments, a *server* based implementation might be employed to *off-load processing demands from the mobile device*,” and that “[a]dditionally, in some cases it might be *quick as or quicker* than a system that uses the mobile communication device to process an image to determine image quality.” Ex. 1003, 10:54–59 (emphases added). Indeed, Dr. Alexander admits at deposition that Nepomniachtchi teaches that remote processing was quick as or quicker than processing on the mobile device. Ex. 2039, 89:24–90:7.

Moreover, as Patent Owner points out, Nepomniachtchi performs the image quality analysis on the mobile device in order to quickly determine whether the image can be accepted, needs correction, or needs retaking. Sur-reply 11–12 (citing Ex. 1003, 10:40–52). The purpose of the image quality analysis is to “determine if the quality of the image or images is sufficient for further processing in accordance with the systems and methods” described in Nepomniachtchi, *i.e.*, the correction processing. Ex. 1003, 9:50–57, 10:9–20. Once the image quality analysis determines that the image is of sufficient quality to be processed with the correction processing, there is no need to ask the user to retake the image. Sur-reply 11–12. Thus, the correction processing can be performed on the server without concern of whether the user has moved away from the check or begun performing other tasks. *Id.* Moreover, if the correction processing can correct the error, there also is no need to prompt the user to retake the image. Thus, Petitioner fails to recognize that Nepomniachtchi already

teaches a solution to address the problem of requesting retakes at the server, by performing the image quality analysis on the mobile device.

Further, Patent Owner asserts that mobile CPU processing was limited in the relevant timeframe and that moving the image analysis from the server, as discussed in *Nepomniachtchi*, to the mobile device, as discussed in *Yoon*, would be counterproductive for someone seeking to reduce the computational burden on the mobile device. *Id.* at 37–39. Dr. Alexander agreed that mobile CPU burden was an issue of interest to developers at the relevant time, but he had no opinion as to whether *Yoon* placed an increased burden on the mobile device’s CPU as compared to *Nepomniachtchi*.

Q. Okay. Is it your opinion that *Yoon* places a greater burden on the CPU processor of the mobile device than the *Nepomniachtchi* system?

A. Well, I don’t know how you could make that comparison. I don’t have any opinion on that, actually.

Q. Okay. Do you know if CPU burden on mobile devices was something that was relevant to developers in the 2008 and 2009 time period?

A. I’m sure they were concerned with it.

Ex. 2039, 67:20–68:3 (deposition of Dr. Alexander). We find Patent Owner’s arguments to be persuasive. Therefore, we are not persuaded by Petitioner’s argument that *Nepomniachtchi* teaches away from its server embodiment. Reply 12. For the foregoing reasons, we are not persuaded by Petitioner’s argument that “the combination lowers the burden of the correction step” so that it would reduce the burden of the computation performed by the *mobile device*. Reply 10–14; *see also* Pet. 42–44; Ex. 1002 ¶¶ 111–115.

In its Reply and during the oral hearing, Petitioner improperly and untimely introduced several arguments for the first time. First, Petitioner argues for the first time that “[t]his fact” that the combination lowers the burden of the correction step “is largely a matter of *common sense*” as the “combined system will lead to a *larger percentage* of properly aligned images being captured in the first place” and “[t]he fewer uses of the correction algorithm, the lower the computational burden.” Reply 10 (emphases added). Second, Petitioner also argues for the first time that “the combination leads to greater computational efficiency . . . by moving the image correction step *into the user’s brain*,” citing Dr. Alexander’s deposition testimony for support. *Id.* at 11 (citing Ex. 2039, 98:11–99:22 (testifying that “the user corrects misalignment by adjusting the position and orientation of the physical copy to fit the alignment guide”)) (emphasis added). Third, during oral hearing, Petitioner repeated those new arguments and, for the first time, argued that the combination “would be a *hybrid system* that offers to the user the option of either manual capture or automatic capture,” and that “the auto capture would occur once the *user’s brain* has *decided* what needs to be done to *satisfy the monitoring criterion*.” *See, e.g.*, Tr. 15:18–18:15, 27:20–25, 79:24–81:14 (emphases added).

Neither the Petition nor Dr. Alexander’s original Declaration includes argument that “the combined system will lead to a *larger percentage of properly aligned images* being captured in the first place,” “moving the image correction step *into the user’s brain*,” or the combination “would be a *hybrid system* that offers to the user the option of either manual capture or automatic capture.” *See* Pet. 42–44; Ex. 1002 ¶¶ 111–115 (emphases

added). Petitioner could have presented those arguments in its Petition, but chose not to do so.

We decline to consider those new arguments presented in its Reply and Dr. Alexander’s deposition testimony that is presented to support those new arguments, as they are improper under 37 C.F.R. § 42.23(b). *Intelligent Bio-Sys*, 821 F.3d at 1370 (holding that “the Board did not err in refusing the reply brief as improper under 37 C.F.R. § 42.23(b) because IBS relied on an entirely new rationale to explain why one of skill in the art would have been motivated to combine Tsien or Ju with a modification of Zavgorodny”); *Acceleration Bay*, 908 F.3d at 775 (holding that “[t]he Board did not abuse its discretion in declining to consider the cited paragraphs in Dr. Karger’s reply declaration” because “[t]he declaration raises a new obviousness argument for this limitation that could have been made in the petition”); CTPG 74.

We also decline to consider Petitioner’s untimely arguments that the combination “would be a hybrid system that offers to the user the option of either manual capture or automatic capture,” and that “the auto capture would occur once the user’s brain has decided what needs to be done to satisfy the monitoring criterion.” *See, e.g.*, Tr. 15:18–18:15, 27:20–25, 79:24–81:14; Ex. 1051, 27. As the Federal Circuit has held, the “Board was obligated to dismiss [the petitioner’s] untimely argument . . . raised for the first time during oral argument.” *Dell Inc. v. Accelaron, LLC*, 884 F.3d 1364, 1369 (Fed. Cir. 2018); *see also* CTPG 86 (stating that “no new evidence may be presented at the oral argument”); *id.* at 84 (stating that “[d]emonstrative exhibits used at the final hearing are aids to oral argument

and not evidence” and they “cannot be used to advance arguments or introduce evidence not previously presented in the record”).

Even if we were to consider those improper and untimely new arguments and Dr. Alexander’s testimony, they still would be unavailing. Notably, Petitioner does not proffer any data or evidence to support its new argument that “the combined system will lead to a *larger percentage of properly aligned images.*” Reply 10 (emphases added). It is well established that “arguments of counsel cannot take the place of evidence lacking in the record.” *Estee Lauder Inc. v. L’Oréal, S.A.*, 129 F.3d 588, 595 (Fed. Cir. 1997) (citations omitted). Moreover, “references to ‘common sense’ . . . cannot be used as a wholesale substitute for reasoned analysis and evidentiary support.” *Arendi S.A.R.L. v. Apple, Inc.*, 832 F.3d 1355, 1362 (Fed. Cir. 2016).

As to Petitioner’s new arguments that “the combination leads to greater computational efficiency . . . by moving the image correction step into the user’s brain” and the combination “would be a hybrid system that offers to the user the option of either manual capture or automatic capture,” and Dr. Alexander’s deposition testimony that “the user corrects misalignment by adjusting the position and orientation of the physical copy to fit the alignment guide” (Reply 11; Ex. 2039, 98:11–99:22; Tr. 15:18–18:15, 27:20–25, 79:24–81:14), they suggest that any computation efficiency gained in the combination would be the result of the *user using an alignment guide* to monitor the alignment of the check, not Yoon’s monitoring and auto-capturing features that are performed by the *processor* of the mobile device. Neither Petitioner nor Dr. Alexander explains with

particularity how implementing Yoon's monitoring and auto-capturing features would increase computational efficiency.

More significantly, those new arguments and the new argument that "the auto capture would occur once *the user's brain* has *decided* what needs to be done *to satisfy the monitoring criterion*" would change the combination, as proposed in the Petition. And the new combination, as argued by Petitioner in its Reply and during oral hearing, would no longer account for the "monitoring" and "determining" limitations recited in claims 1 and 10 that requires "the *processor* is configured to . . . monitor at least one feature of the instrument detected by the information capture component" and "determine whether the at least one feature of the instrument aligns with the alignment guide." *See, e.g.*, Ex. 1001, 18:49–61.

Those new arguments and Dr. Alexander's deposition testimony also contradict Petitioner's original position advanced in the Petition. Petitioner makes clear in its Petition that the *processor* of the mobile device, not the user, performs the monitoring, determining, and capturing steps. Pet. 37–39, 49–50. In its Petition, Petitioner relies upon Yoon's monitoring and auto-capturing features to account for the "monitoring," "determining," and "capturing" limitations recited in claims 1 and 10, as well as to support its motivation to combine the references. *Id.* Hence, Petitioner's new arguments and Dr. Alexander's deposition testimony do not support Petitioner's position that a relevant artisan would have been motivated to add Yoon's monitoring and auto-capturing features on the mobile device in Nepomniachtchi.

Moreover, as discussed above, we are not persuaded by Petitioner's argument that "the combination lowers the burden of the correction step."

Reply 10. Any reduction of the correction processing performed on the server would result in an efficiency gain on the *server*, not the mobile device. Petitioner also admits that “the proposed combination here is *additive*, it does not replace Nepomniachtchi’s correction algorithm with Yoon’s pre-capture feedback.” *Id.* 9. Petitioner fails to articulate a reasoned explanation why a relevant artisan would have been motivated to add Yoon’s monitoring and capturing features, which would increase the burden on the mobile device, in order to reduce the correction processing performed on the *server*. *In re Nuvasive*, 842 F.3d 1376, 1382 (Fed. Cir. 2016) (requiring a reasoned explanation why the additional information would benefit an ordinarily skilled artisan in an obviousness determination).

More importantly, Petitioner does not explain, nor do we discern, why a person of ordinary skill in the art would have moved the correction processing to the *mobile device*, and then would have been motivated to minimize the need for this algorithm and to add Yoon’s monitoring and capture features on the *mobile device*, as Petitioner alleges (Pet. 42–44). Petitioner’s argument amounts to nothing more than impermissible hindsight. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (The fact finder must be aware “of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.”) (citing *Graham*, 383 U.S. at 36 (warning against a “temptation to read into the prior art the teachings of the invention in issue”))).

For the foregoing reasons, Petitioner’s argument that one of ordinary skill in the art would have been motivated to minimize the need for the correction processing is conclusory, not supported by Dr. Alexander’s testimony or Nepomniachtchi’s disclosure. Obviousness cannot be

established “by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 997, 998 (Fed. Cir. 2006)).

b) Petitioner Has Not Established That One of Ordinary Skill in the Art Would Remove User Judgement

Petitioner asserts that “[person of ordinary skill in the art] would have been motivated to combine Nepomniachtchi and Yoon so that a mobile device would automatically capture information of an instrument using Yoon’s alignment guide and the mobile device would transmit the captured information to a server.” Pet. 42. Patent Owner contends that “a fundamental problem” with Petitioner’s proposed combination that incorporates Yoon’s automatic capture technique into Nepomniachtchi is that it “results in [a] check image that [Petitioner] asserts is better *aligned*, but not necessarily check images that are more *suitable for deposit*, which is based on numerous factors other than alignment.” PO Resp. 41. According to Patent Owner, Petitioner’s proposed combination “replace[s] the *user’s judgment* . . . regarding when to capture the image of the check. The decision to capture an image can only be made once: either triggered manually by the user, as in Nepomniachtchi, or triggered automatically by the system, as in Yoon.” *Id.* at 42 (citing Ex. 2032 ¶ 29) (internal citations omitted). “Eliminating this user judgment and relying solely on alignment to determine when to capture the check image would result in significant problems. For example, an automatically-captured check image that is perfectly aligned, but inverted in Nepomniachtchi’s system is worthless because the MICR is read based on location.” *Id.* at 44.

In its Petition, Petitioner does not explain with particularity why a relevant artisan would have been motivated to replace the user’s judgment for capturing quality check images that is based on numerous factors in Nepomniachtchi, with an automatic capture based on alignment alone. Pet. 42–44. Petitioner merely states that a person of ordinary skill in the art “would have been motivated to combine Nepomniachtchi and Yoon so that a mobile device would *automatically capture* an image of a check using Yoon’s alignment guide”—essentially, converting Nepomniachtchi to an auto-capture system solely based on alignment. *Id.* at 42 (emphasis added).

As Patent Owner points out, the combination as proposed by Petitioner in its Petition would automatically capture the image as soon as the borders of the check image aligned with the rectangular alignment guide regardless of whether the image was suitable in other aspects. Sur-reply 17 (citing Ex. 2032 ¶¶ 29, 31). Mr. Mott testifies that “[i]n a manual capture system, the user makes a determination of when to capture the image (for example, by pressing a shutter button when the user judges that the check image looks acceptable),” whereas “[i]n an automatic capture system, the system itself must determine when to capture the image, without the aid of the user’s judgment.” Ex. 2032 ¶ 29.

We credit Mr. Mott’s testimony, as it is consistent with Yoon. Notably, Yoon teaches “allowing a business card to be automatically photographed by detecting the boundary lines of the business card.” Ex. 1005 ¶ 3. In particular, Yoon teaches that once it is determined that the business card recognition and photographing mode has been selected, Yoon’s terminal outputs an image and displays rectangular reference boundary lines on the display unit. *Id.* ¶ 24. And then, the terminal

repeatedly checks whether the brightness is appropriate and whether the reference boundary lines coincide with the boundary lines of the business card, until the brightness is appropriate and all the reference boundary lines coincide with all the boundary lines of the business card before the portable terminal photographs the business card. *Id.* ¶¶ 25–29, Figs. 2, 3A–3D.

Nepomniachtchi’s invention is for capturing suitable check images for deposit. Ex. 1003, code (54), 6:58–61. Nepomniachtchi identifies a list of criteria for capturing suitable check images for deposit. Ex. 1003, 7:4–7:59. Dr. Alexander admits during deposition that to ensure that the check image can be successfully deposited, “there are many factors: Focus, brightness, smudgy images, torn checks, torn, folded checks, misaligned checks, smudges over the check, bad handwriting.” Ex. 2039, 119:7–120:7.

Dr. Alexander concedes that alignment and brightness alone are not sufficient to ensure that a check image is suitable for deposit. *Id.* Petitioner also admits that “even when using the alignment guide, non-confirming check images would still be presented,” and “[n]o matter what alignment guide is used, there is no way to enable the system to be electronically read an image of an illegible check.” Pet. 17.

Moreover, as Patent Owner points out, replacing the user’s judgment that is based on numerous factors, with an auto-capture system based solely on alignment, would not minimize the need for retaking the images, but would instead introduce additional errors. PO Resp. 44–46. For example, Yoon’s alignment technique does not determine whether the check is upside down or not, or whether the MICR information is in the correct location, when the camera captures the image. *Id.* at 44. Dr. Alexander confirms during deposition that “I don’t see any capability in Yoon for detecting

upside down images.” Ex. 2039, 92:23–93:1. As another example, resolution and focus are important criteria for check image deposit. Ex. 1003, 7:60–8:34. Dr. Alexander admits that, in the combination, moving the camera closer to or farther away from the check so that the check would appear within the alignment guide may increase resolution errors. Ex. 2039, 116:18–117:11.

Based on the evidence in this entire trial record, we agree with Mr. Mott’s testimony that a relevant artisan “would have no reason to expect that a system evaluating only alignment and/or brightness prior to capture would automatically capture check images that were suitable for deposit processing based on all of the criteria identified in *Nepomniachtchi*.” Ex. 2032 ¶ 31 (citing Ex. 1003, 7:4–7:59). Hence, Petitioner fails to articulate why a relevant artisan would have been motivated to replace the user’s judgment for capturing quality check images that is based on numerous factors in *Nepomniachtchi*, with an automatic capture based on alignment alone. *See Nuvasive*, 842 F.3d at 1382.

In its Reply, Petitioner argues that the claims do not require capturing an image that is suitable for deposit. Reply 17. As Patent Owner notes,

The *Nepomniachtchi* system is a check deposit system; it captures images of checks for deposit. *Nepomniachtchi* does not prompt users to retake check images if they do not satisfy the requirements of the ’517 Patent claims; it prompts users to retake check images if their quality is too poor for check deposit. *See* Ex. 1003, 7:55–59. A [person of ordinary skill in the art] interested in reducing the frequency of prompting the user to retake images would thus be concerned not with the limitations of the ’517 Patent claims but with the overall quality of the check images captured by the combined system.

Sur-Reply 18. We agree. The question here is not whether deposit suitability is an element of the claims, but rather whether one of skill in the art looking to improve upon Nepomniachtchi would look to the teachings of Yoon. Dr. Alexander concedes that alignment and brightness alone are not sufficient to ensure that a check image is suitable for deposit. Ex. 2039, 119:7–120:7. Petitioner also admits that “even when using the alignment guide, non-confirming check images would still be presented,” and “[n]o matter what alignment guide is used, there is no way to enable the system to be electronically read an image of an illegible check.” Pet. 17. Moreover, Mr. Mott testifies that a relevant artisan “would have no reason to expect that a system evaluating only alignment and/or brightness prior to capture would automatically capture check images that were suitable for deposit processing based on all of the criteria identified in Nepomniachtchi.” Ex. 2032 ¶ 31 (citing Ex. 1003, 7:4–7:59). Therefore, Petitioner’s argument that the claims do not require capturing an image that is suitable for deposit is unavailing. *See* Reply 17.

In its Reply, Petitioner improperly argues for the first time that the prior art shows that replacing the user’s judgment “was a good thing,” that “Nepomniachtchi taught that images captured according to human judgment of alignment often needed correction,” and that “Yoon taught that machine judgment of image alignment was preferable to user judgment.” *Id.* at 15–16 (citing Ex. 1003, 11:29–30; Ex. 1005 ¶¶ 7, 8, 11). During oral hearing, Petitioner also presented that new argument and improperly attempted to change its position by arguing that the combination would not remove the user’s judgment. Tr. 28:22–23, 29:1–12.

Tellingly, Petitioner's new arguments suggest that the Petition itself lacks sufficient particularity as to what prior art teachings are being combined and why a person of ordinary skill in the art at the time of the invention would have been motivated to combine Nepomniachtchi and Yoon. Petitioner could have presented those arguments in its Petition, but chose not to. We decline to consider those new arguments, as they are improper under 37 C.F.R. § 42.23(b) and untimely. *See Intelligent Bio-Sys*, 821 F.3d at 1370; *Dell*, 884 F.3d at 1369; CTPG 74, 85.

Even if we were to consider the improper new arguments on the merits, they still would be unavailing. At the outset, Petitioner's new argument that the combination would not remove the user's judgment (Tr. 28:22–23, 29:1–12) does not change the fact that Petitioner admits unequivocally in writing that “[i]t is true that combining Nepomniachtchi and Yoon would replace the user's judgment about whether the image was aligned.” Reply 15. That new argument also contradicts Petitioner's original position asserted in the Petition that a person of ordinary skill in the art “would have been motivated to combine Nepomniachtchi and Yoon so that a mobile device would *automatically capture an image of a check using Yoon's alignment guide.*” Pet. 42 (emphasis added).

Furthermore, Petitioner's new argument that replacing the user's judgment “was a good thing” is inconsistent with Petitioner's other argument and Dr. Alexander's deposition testimony that rely on the user's judgment to achieve computational efficiency in the combination, which, as discussed above, suggest that any computation efficiency gained in the combination would be the result of the user using an alignment guide, not Yoon's monitoring and auto-capturing features. Reply 11 (“the combination

leads to greater computational efficiency . . . by moving the image correction step into the user’s brain”); Ex. 2039, 98:11–99:22 (testifying that “the user corrects misalignment by adjusting the position and orientation of the physical copy to fit the alignment guide”).

Petitioner admits that “the difference between human judgment and computer judgment could only come up with extreme situations.” Tr. 28:24–29:12. Yet, Petitioner does not explain why a relevant artisan would have been motivated to add Yoon’s monitoring and auto-capturing features, which would increase the burden on Nepomniachtchi’s mobile device and may lead to slower response times and user dissatisfaction.

In addition, we do not agree with Petitioner’s characterization of Nepomniachtchi’s teaching as humans did not do a good job because they need the correction processing. Reply 15; Tr. 29:1–3. Tellingly, Petitioner’s combination that includes an auto-capture feature still would need the correction processing. According to Petitioner, the combination “does not replace Nepomniachtchi’s correction algorithm with Yoon’s pre-capture feedback.” Reply 9. Dr. Alexander admits that, even using Yoon’s alignment guide, the combination of Nepomniachtchi and Yoon was “not going to be 100 percent aligned because he allows a margin of error.” Ex. 2039, 106:4–10.

As discussed above, Petitioner also narrowly focuses on two aspects of Nepomniachtchi’s teachings (the correction processing and requests for retake), but fails to consider Nepomniachtchi as a whole, which already provides the solutions to address the potential image defects. Ex. 1003, 7:55–57, 8:39–43, 9:50–54, 10:9–20, 10:40–59, 11:29–30.

Nepomniachtchi makes clear that its solutions collectively include:

(1) utilizing the user’s judgment (e.g., placing the camera directly above the document, rather than at an angle, to avoid image distortion) for the pre-capturing analysis; (2) performing the image quality analysis on the mobile device to quickly determine whether the image can be accepted, needs correction, or needs retaking while the user is still physically close to the document and before starting another task; and (3) performing the correction processing to “clean up the image by performing auto-rotate, de-skew, perspective distortion correction, cropping, etc.” *Id.* Once the image quality analysis determines that the image is of sufficient quality to be processed with the correction processing, there is no need to ask the user to retake the image. *Id.* Thus, the correction processing can be performed on the server without concern of whether the user has moved away from the check or begun performing other tasks. *Id.* Moreover, if the correction processing can correct the error, there also is no need to prompt the user to retake the image. Petitioner fails to recognize that Nepomniachtchi already teaches a solution to address the problem of requesting retakes.

Yoon’s preference of machine judgment is related to a system that takes out the user’s judgment on aligning the business card with the alignment guide and has no image quality analysis or correction processing. Ex. 1005 ¶ 7. Petitioner does not explain with particularity how Yoon’s machine judgment benefits Nepomniachtchi’s system, much less why a relevant artisan would have replaced the user’s judgment for capturing quality check images based on numerous factors with an auto-capture that is based on alignment alone. Pet. 42–44; Reply 15–16. And as discussed above, Petitioner does not provide a reasoned explanation why a relevant artisan would have been motivated to add Yoon’s monitoring and capturing

features in Nepomniachtchi, which would increase the burden on the mobile device. Dr. Alexander admits that a relevant artisan “would have understood that excessive computation performed on a mobile device would necessarily lead to slower than desirable response times and potential user dissatisfaction.” Ex. 1002 ¶ 114.

Therefore, we are not persuaded by Petitioner’s argument that the prior art shows that replacing the user’s judgment “was a good thing.” Reply 15–16.

c) Conclusion

Petitioner asserts that an artisan of ordinary skill “would have been motivated to combine Nepomniachtchi and Yoon so that a mobile device would automatically capture information of an instrument using Yoon’s alignment guide and the mobile device would transmit the captured information to a server.” Pet. 42. Further, a person of ordinary skill in the art “would have understood that the alignment of the image was important when capturing the image of a check and that while it may be possible to correct a skewed image with image processing, that processing was computationally intensive.” *Id.* at 43. Finally, “[a person of ordinary skill in the art] seeking to obtain better images of checks would have been motivated to add to Nepomniachtchi the techniques of Yoon to solve for checks the same problems Yoon solved for business cards . . . [and] therefore would have been motivated to combine Nepomniachtchi’s mobile phone check imaging embodiment with Yoon’s techniques for aligning a document with a mobile device camera to obtain a good, well-aligned photograph of a document.” *Id.* at 44.

We are not persuaded by Petitioner's proffered rationale. As explained above, we agree with Patent Owner's argument that incorporating the teachings of Yoon into Nepomniachtchi's system would lead to a system with increased – rather than decreased – computational burdens on the mobile device at a time when developers were concerned with the burden on a mobile CPU. We also are persuaded by Patent Owner's argument that Petitioner has not sufficiently explained the benefit that could flow from replacing multi-faceted human judgment with machine judgment that is singularly focused on alignment. As noted in *Nepomniachtchi*, alignment is but one of many issues that can cause difficulties for *Nepomniachtchi*'s system. *See e.g.*, Ex. 1003, 7:60–8:34. Thus, we are not persuaded that one of ordinary skill in the art would have looked to the teachings of Yoon to improve *Nepomniachtchi*'s system because the evidence and arguments advanced by Patent Owner establish that Yoon would have brought notable deficiencies to *Nepomniachtchi*'s system without providing notable improvements. Therefore, based on the evidence in this entire trial record, we determine that Petitioner fails to articulate an adequate motivation to combine *Nepomniachtchi* and Yoon to arrive at the claimed invention.

2. Dependent Claims 5, 6, 9, 12, 13, and 18–20

Petitioner asserts that dependent claims 5, 6, 9, 12, 13, and 18–20 would have been obvious over *Nepomniachtchi* and Yoon. Pet. 44–55. These challenges, however, rely on the same motivation combine analysis discussed above in relation to the independent claims. Thus, for the same reasons discussed above, we determine that Petitioner has not established by

a preponderance of the evidence that claims 5, 6, 9, 12, 13, and 18–20 are unpatentable under § 103(a) as obvious over Nepomniachtchi and Yoon.

E. Obviousness over Nepomniachtchi, Yoon, and Cho

Petitioner asserts that dependent claims 7, 8, 14, and 17 are unpatentable under § 103(a) as obvious over Nepomniachtchi, Yoon, and Cho. Pet. 55–64. These challenges, however, rely on the same motivation combine analysis discussed above in relation to the independent claims. *See* Pet. 63 (relying upon the same contentions discussed above in regards to the previous ground). Thus, for the same reasons discussed above, we determine that Petitioner has not established by a preponderance of the evidence that claims 7, 8, 14, and 17 are unpatentable under § 103(a) as obvious over Nepomniachtchi, Yoon, and Cho.

F. Patent Owner's Motions to Exclude

Patent Owner requests Exhibits 1008, 1013–1015, 1019–1021, and 1031, be excluded from consideration as irrelevant under Federal Rule of Evidence 402. Paper 29, 1–2. Patent Owner also requests that Exhibits 1013–1015, 1019–1021, and 1031, be excluded from consideration as not properly authenticated per Federal Rule of Evidence 901. *Id.* at 2.

Under the particular circumstances in this case, we need not assess the merits of Patent Owner's Motion to Exclude Evidence. As discussed above, even without excluding Petitioner's evidence, we have determined that Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 5–10, 12–14, and 17–20 of the '517 patent are unpatentable.

Accordingly, Patent Owner's Motion to Exclude Evidence is *dismissed* as moot.

III. CONCLUSION

In summary:

Claim(s) Challenged	35 U.S.C. §	Reference(s)	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 5, 6, 9, 10, 12, 13, 18–20	103(a)	Nepomniachtchi, Yoon		1, 5, 6, 9, 10, 12, 13, 18–20
7, 8, 14, 17	103(a)	Nepomniachtchi, Yoon, Cho		7, 8, 14, 17
Overall Outcome				1, 5–10, 12– 14, 17–20

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has not established by a preponderance of the evidence that claims 1, 5–10, 12–14, and 17–20 of the ‘517 patent are unpatentable;

FURTHER ORDERED that Patent Owner’s Motion to Exclude is dismissed as moot; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2019-1081
Patent 9,336,517 B1

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CERTIFICATE OF SERVICE AND FILING

I hereby certify that on January 22, 2021, in addition to being filed and served electronically through the Board's E2E System, this PETITIONER'S NOTICE OF APPEAL was filed and served with the Director of the United States Patent and Trademark Office by hand delivery at the following address:

Office of the General Counsel
U.S. Patent and Trademark Office
Madison Building East, Room 10B20
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I also hereby certify that on January 22, 2021, a copy of this PETITIONER'S NOTICE OF APPEAL and the filing fee, were filed with the Clerk's Office of the United States Court of Appeals for the Federal Circuit via the CM/ECF system.

I also hereby certify that on January 22, 2021, this PETITIONER'S NOTICE OF APPEAL was served by electronic mail on counsel for the Patent Owner as follows:

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