UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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WELLS FARGO BANK, N.A.,
Petitioner,

v.

UNITED STATES AUTOMOBILE ASSOCIATION,
Patent Owner.

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Case No. IPR2019-01082
Patent No. 8,977,571

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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

November 24, 2020, (Paper No. 41), and from all underlying orders, decisions,

rulings, and opinions relating to U.S. Patent No. 8,977,571 set forth in *Inter Partes*

Review IPR2019-01082.

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 1-13 of the '571 patent are not unpatentable under 35 U.S.C. § 103(a) based on Nepomniachtchi, Yoon, and Acharya; 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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WELLS FARGO BANK, N.A.,
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UNITED SERVICES AUTOMOBILE ASSOCIATION,
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IPR2019-01082
Patent 8,977,571 B1

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Before JONI Y. CHANG, BARBARA A. BENOIT, and
STACEY G. WHITE, *Administrative Patent Judges*.

CHANG, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Wells Fargo Bank, N.A. ("Petitioner") filed a Petition requesting an *inter partes* review ("IPR") of claims 1−13 ("the challenged claims") of U.S. Patent No. 8,977,571 B1 (Ex. 1001, "the '571 patent"). Paper 2 ("Pet."). United Services Automobile Association ("Patent Owner") filed a Preliminary Response. Paper 6 ("Prelim. Resp."). Upon consideration of the Petition and Preliminary Response, we instituted the instant *inter partes* review of all of the challenged claims and on all of the grounds presented in the Petition. Paper 9 ("Dec.").

Subsequent to institution, Patent Owner filed a Response (Paper 17, "PO Resp.") and a Sur-reply (Paper 24, "Sur-reply"); Petitioner filed a Reply (Paper 22, "Reply"). An oral hearing was held on September 23, 2020, and a transcript is included in the record as Paper 35 ("Tr.").

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons set forth below, Petitioner has not demonstrated by a preponderance of the evidence that claims 1−13 of the '571 patent are unpatentable.

A. Related Matters

The parties indicate that the '571 patent is involved in *United Servs. Automobile Ass'n v. Wells Fargo Bank, N.A.*, No. 2:18-CV-00245-JRG (E.D. Tex., filed Jun. 7, 2018). Pet. 61−63; Paper 5, 2. The '571 patent also was involved in a proceeding under the transitional program for covered business method patents ("CBM"), which was not instituted because the '571 patent was ineligible for CBM review. *See Wells Fargo Bank, N.A. v.*

United Servs. Auto. Ass'n, CBM2019-00004, Paper 22 (PTAB May 15, 2019) (Decision Denying Institution).[1]

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[1] 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. 9,336,517 B1 (CBM2019-00003 and IPR2019-01081); (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); and (6) U.S. Patent No. 10,013,605 B1 (CBM2019-00029). *See* Paper 5, 2−3. To date, 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) (Decision Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass'n*, CBM2019-00003, Paper 25 (PTAB June 3, 2019) (Decision Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass'n*, CBM2019-00004, Paper 22 (PTAB May 15, 2019) (Decision Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass'n*, CBM2019-00005, Paper 25 (PTAB June 3, 2019) (Decision Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass'n*, CBM2019-00027, Paper 13 (PTAB Oct. 1, 2019) (Decision Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass'n*, CBM2019-00028, Paper 14 (PTAB Oct. 1, 2019) (Decision Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass'n*, CBM2019-00029, Paper 13 (PTAB Oct. 1, 2019) (Decision Denying Institution); *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass'n*, IPR2019-00815, Paper 17 (PTAB Aug. 26, 2019) (Decision Denying Institution). *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass'n*, IPR2019-01083, Paper 9 (PTAB Jan. 9, 2020) (Decision Granting Institution). We instituted a review in IPR2019-01083. *Wells Fargo Bank,*

B. The '571 Patent

The '571 patent is titled "Systems and Methods For Image Monitoring of Check During Mobile Deposit." Ex. 1001, code (57). Figure 1 of the '571 patent is reproduced below.
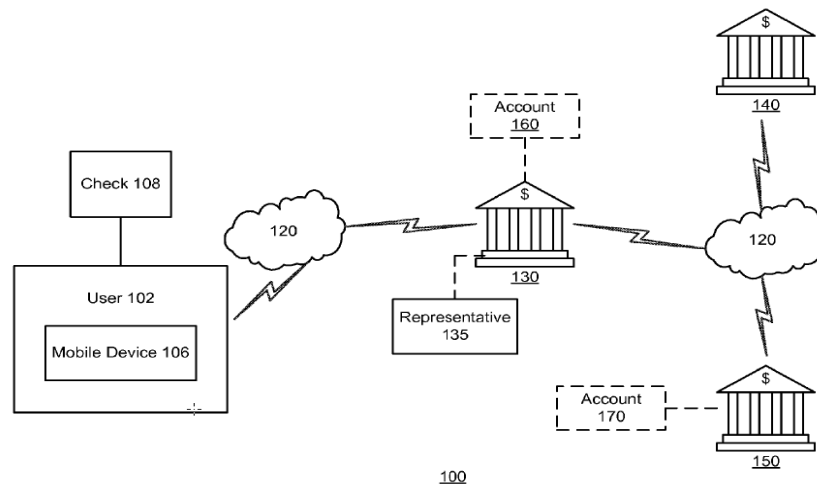

Figure 1 above illustrates a system "in which example embodiments and aspects may be implemented." *Id.* at 2:43−45. As shown in Figure 1, system 100 includes an account owner (user 102) and financial institutions 130, 140, 150 (e.g., banks), communicating with each other via networks 120 (e.g., the Internet). *Id.* at 2:45−52, 3:4−22. User 102 may deposit check 108 in account 160, and financial institution 130 may process and clear check 108. *Id.* at 3:10−12. 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 3:45−48.

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N.A. v. United Servs. Auto. Ass'n, IPR2019-01083, Paper 9 (PTAB Jan. 8, 2020) (Decision Granting Institution).

The '571 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, 1:22–24. Thus, "[t]o reduce such burdens for the payee, systems and methods have been developed to enable the remote deposit of checks." *Id*. at 1:24–26. The '571 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 1:26–30. However, the '571 patent 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 subsequent detection and extraction of the information from the digital image is difficult." *Id*. at 1:26–35. In addition, the '571 patent discloses that electronically exchanging a check image requires the image to be in "Check 21 compliant format." *Id*. at 12:16–17. The Specification of the '571 patent 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 12:19–25.

The Specification discloses an invention wherein:

> An image of a check that is in the field of view of a camera is *monitored prior to the image of the check being captured*. The camera is associated with a mobile device. The *monitoring may*

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> *be performed by the camera, the mobile device, and/or a*
> *financial institution* that is in communication with the mobile
> device. When the image of the check in the field of view passes
> monitoring criteria, 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 1:38–47 (emphases 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, the image is monitored for compliance with one or more monitoring criteria, prior to the image of the check 108 being captured." *Id.* at 3:54–58 (emphasis added). The Specification further states that "[a]n application may *monitor whether* the check 108 is sufficiently within the frame of the camera and has a *high enough quality for subsequent processing*." *Id.* at 3:61–64 (emphasis added); *see also id.* at 4:17–22 ("By ensuring that the image of the check passes monitoring criteria during pre-image capture monitoring, *the number of nonconforming images of checks is reduced* during presentment of the images to a financial institution for processing and clearing." (emphasis added)); 7:52–57; 8:45–49; 10:6–13; 12:9–14; 13:38–40 ("Compliance with the monitoring criteria is intended to ensure that the image of the check is suitable for one or more processing tasks.").

Figure 3 of the '571 patent is reproduced below.

FIG. 3
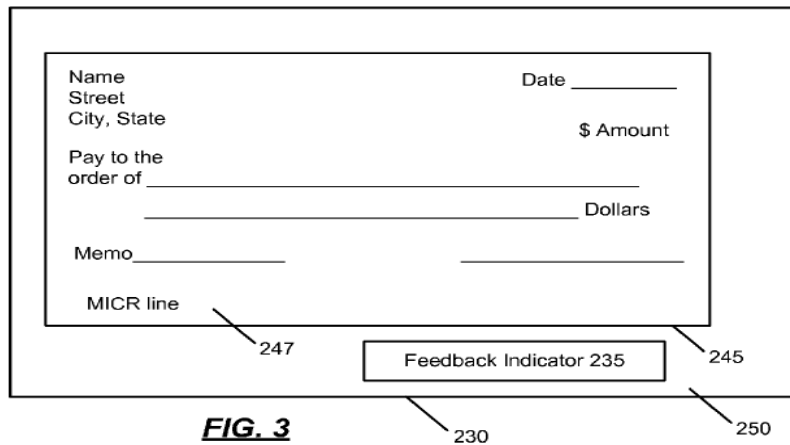
As shown in Figure 3 above, image 230 comprises check image 247, background image 250, feedback indicator 235, and edge 245, which separates check image 247 from background image 250. *Id.* at 6:63−7:2. Image 230 may be generated by a mobile device with a camera and provided in the field of view of the camera prior to and during image capture of the check. *Id.* at 6:65−67, 7:3−5.

According the Specification, one of the monitoring criteria may be based on the positioning of check 108 in image 230. *Id.* at 7:29−30. The positioning of check 108 in image 230 may be compared with an alignment guide. *Id.* at 7:38−41. The alignment guide may be a bounding rectangle, horizontal and/or vertical bars, or parallel lines. *Id.* at 7:59−62. For example, "aligning the check 108, thereby passing this monitoring criterion, means enclosing the check 108 within the bounding rectangle." *Id.* at 7:62−65. If check 108 is outside the alignment guide in image 230, feedback is generated and provided to user 102 regarding this monitoring

criterion with instruction for moving check 108 or the camera in order to align properly check 108 in the field of view. *Id.* at 7:65−8:3.

The Specification also discloses that "[i]n an implementation, the results of the monitoring may indicate that the camera and/or the check should be repositioned and/or the light source should be adjusted prior to an image capture in order to capture an image of the check that may be processed properly, e.g., *to have the data from the check obtained without error from the image, so that that check can be cleared*." *Id.* at 15:43–49 (emphasis added). The Specification explains that "feedback based on the results may be generated and provided visually and/or aurally to the user via the camera and/or the mobile device" and that "the feedback may be provided if the image fails to pass the monitoring criteria." *Id.* at 15:50–53.

C. Illustrative Claims

Of the challenged claims, claims 1 and 9 are independent. Claims 2−8 depend from claim 1, and claims 10−13 depend from claim 9. Claims 1 and 9 are reproduced below:

> 1.   A non-transitory computer-readable medium comprising computer-readable instructions for depositing a check that, when executed by a processor, *cause the processor to*:
>
> *monitor an image of the check* in a field of view of a camera of a mobile device *with respect to a monitoring criterion* using an image monitoring and capture module of the mobile device;
>
> *capture the image of the check with the camera when the image of the check passes the monitoring criterion*; and
>
> provide the image of the check from the camera to a depository via a communication pathway between the mobile device and the depository.

Ex. 1001, 21:5–17 (emphases added).

> 9. A non-transitory computer-readable medium comprising computer-readable instructions for depositing a check that, when executed by a processor, *cause the processor to*:
>
> initialize a software object on a mobile device operated by a user, the software object configured to communicate with a camera;
>
> *monitor an image of the check* in a field of view of the camera with *respect to a monitoring criterion* using an image monitoring and capture module associated with the camera;
>
> *capture the image of the check using the camera when the image of the check in the field of view passes the monitoring criterion*; and
>
> transmit the image of the check from the mobile device to a deposit system configured to clear the check and deposit funds of the check into a deposit account of the user.

Id. at 21:51−22:7 (emphases added).

D. Prior Art Relied Upon

Petitioner relies upon the references listed below (Pet. 26):

Reference	Date	Exhibit No.
Nepomniachtchi, US 7,778,457 B2[2]	Aug. 17, 2010	1003

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[2] Based on this entire trial record, we determine that Petitioner has made a sufficient showing that Nepomniachtchi qualifies as prior art under § 102(e). Pet. 26−28 (Nepomniachtchi "was filed on March 3, 2010, as a continuation of application no. 12/346,026, filed on December 30, 2008, which in turn claimed priority to provisional application no. 61/022,279, filed January 18, 2008, Ex. 1003, Cover"; and "every element of claim 1 of Nepomniachtchi had § 112 support in both the parent and provisional applications as shown

Reference	Date	Exhibit No.
Yoon, US 2007/0262148 A1	Nov. 15, 2007	1005
Acharya, WO 01/61436 A2	Aug. 23, 2001	1032

E. Sole Asserted Ground of Unpatentability

Petitioner asserts the following ground of unpatentability (Pet. 26)[3]:

Claims Challenged	35 U.S.C. §	References
1–13	103(a)	Nepomniachtchi, Yoon, Acharya

II. ANALYSIS

A. Level of Ordinary Skill in the Art

In determining 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

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in the table below."). Patent Owner does not challenge the prior art status of Nepomniachtchi. *See generally* PO Resp.

[3] 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.

workers in the field." *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quotation marks omitted).

Here, Petitioner asserts that, as of August 2009, a person of ordinary skill in the art in the context of the '571 patent 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 Petitioner's assessment. PO Resp. 23−24 (stating that it "applies this level of ordinary skill in the art in its Response"). 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). As such, in this Final Written Decision, we apply Petitioner's assessment on the level of ordinary skill in the art.

B. Claim Construction

In an *inter partes* review proceeding based on a petition filed on or after November 13, 2018, 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). *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,340, 51,358 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018) (now codified at 37 C.F.R. § 42.100(b) (2019)). 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 terms from claims at issue in this Petition in the parallel district court proceeding. Pet. 12 (citing Ex. 1034, 1–5; Exs. 1035–1037 (the parties' claim construction briefs filed in the district court proceeding)). According to Petitioner, however, the parties' claim construction disputes do not affect the outcome of this Petition with respect to any claim. *Id.* at 12, 15, 18, 22, 38–40, 39, 42. For example, Petitioner notes that the parties dispute the construction of "mobile device." *Id.* at 38. Petitioner argues that this dispute is immaterial to this petition because Nepomniachtchi discloses that the mobile device was a mobile communication device and Yoon discloses using a portable terminal. *Id.* Petitioner also notes that the parties dispute the construction of "capture . . . when the image of the check passes the monitoring criterion." *Id.* at 42. Petitioner argues that this dispute is immaterial to this petition because "Yoon discloses that the image is automatically captured when the monitoring criterion is satisfied without human intervention." *Id.*

In the Patent Owner Response, Patent Owner notes that the district court issued a claim construction order for certain claim terms of the '571

patent. PO Resp. 24; Ex. 2026 (Claim Construction Memorandum Opinion and Order). Patent Owner also addresses the following claim terms: "a monitoring criterion," "passes the monitoring criterion," "feedback," and "mobile device." PO Resp. 24−31. In its Reply, Petitioner counters that construction of those terms are unnecessary. Reply 2−8.

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) (noting that "we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

C. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

D. Obviousness over Nepomniachtchi in view of Yoon and Acharya

Petitioner asserts that claims 1−13 are unpatentable under § 103(a) as obvious over Nepomniachtchi in view of Yoon and Acharya, citing the Declaration of Dr. Peter Alexander for support. Pet. 29–61 (citing Ex. 1002).

Patent Owner argues that Petitioner fails to articulate a sufficient reason to combine the teachings of Nepomniachtchi and Yoon to arrive at the claimed invention. PO Resp. 33−51. For the reasons discussed below, we agree with Patent Owner.

Based on the evidence in this entire trial record, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 1−13 are unpatentable under § 103(a) as obvious over Nepomniachtchi in view of Yoon and Acharya.

1. Nepomniachtchi (Exhibit 1003)

Nepomniachtchi discloses methods and systems for mobile image capture and processing of checks. Ex. 1003, codes (54), (57). 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 explains that "[b]efore a check amount is deducted from a payer's account, the amount, account number, and other important

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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 as surface when photographed or *the angle* at which the document was photographed," and that "[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.

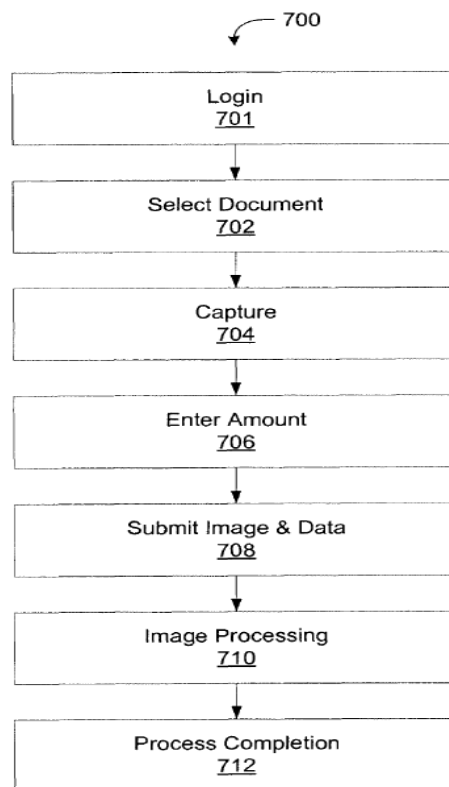Figure 7 of Nepomniachtchi is reproduced below.

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 a check. *Id.* at 9:41−50. The application also conducts image processing to determine if the quality of the images 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

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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.* at 10:19−20. In some embodiments, some or all data processing might be performed at the mobile communication 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. Figure 1 of Yoon is reproduced below.
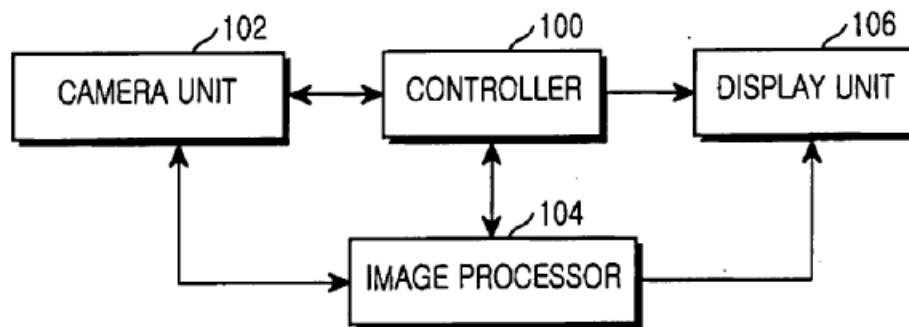

Figure 1 shows a block diagram of a portable terminal comprised of controller 100, camera unit 102, image processor 104, and display unit 106. *Id.* ¶ 19. Controller 100 displays on "display unit 106 reference boundary lines, for presenting a size and location, of a business card, which are appropriate 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
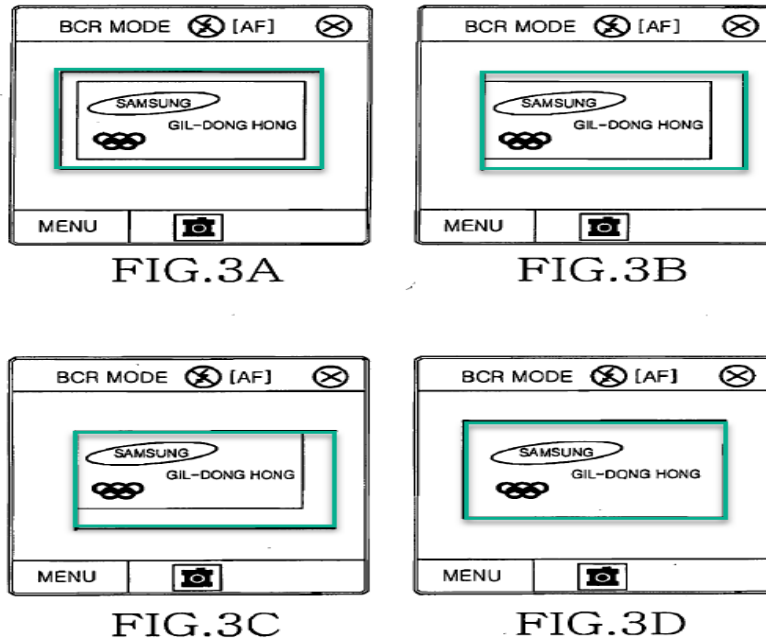
As shown in Figure 3A−3D of Yoon above, the *reference boundary lines* (highlighted in green) "for presenting a size and location of a business card, which are appropriate for recognizing the business card, are displayed as a *rectangular frame* in the center of the display unit 106." *Id.* ¶¶ 24−28 (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.*

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 the boundary lines of the business card." *Id.* ¶ 29. If so, the portable terminal photographs the business card. *Id.*

3. Acharya (Exhibit 1032)

Acharya discloses a system and method for electronic check deposits from remote locations. Ex. 1032, code (57). In particular, Acharya teaches a remote customer terminal comprised of a personal computer with an attached image scanner, where a bank customer would capture an image of a check and transmit the image to a depository in order to deposit remotely the check into the customer's account. *Id.* at 3:10−21.

4. Monitoring and Capturing an Image of the Check

Claim 1 recites the following "monitoring" and "capturing" limitations:

> A non-transitory computer-readable medium comprising computer-readable instructions for depositing a check that, when executed by a processor, *cause the processor to*:
>
> *monitor an image of the check* in a field of view of a camera of a mobile device *with respect to a monitoring criterion* using an image monitoring and capture module of the mobile device;

>*capture the image of the check with the camera when the image
of the check passes the monitoring criterion.*

Ex. 1001, 21:5–14 (emphases added).

Claim 9 recites similar limitations. *Id.* at 21:56−22:3. By virtue of their dependency, claims 2−8, and 10−13 also require these limitations.

5. Petitioner's Arguments as to the Contents of the Prior Art

In its Petition, Petitioner asserts that the combination of Nepomniachtchi, Yoon, and Acharya teaches the aforementioned "monitoring" and "capturing" limitations as recited in claims 1 and 9. Pet. 33−47, 54−56. In particular, Petitioner argues that Nepomniachtchi teaches using a mobile device to capture and process an image of "a check that is to be deposited." *Id.* at 34 (citing Ex. 1003, 6:19−24, 6:50−53). For the "monitoring" limitation, Petitioner argues that Nepomniachtchi teaches "monitoring an image of a check," and "determining the quality of an image and prompting the user to capture another image if the quality was poor." *Id.* at 36 (citing Ex. 1003, 6:19−20, 7:55−59).

Petitioner specifically points out that Nepomniachtchi teaches that "capturing images of checks with mobile devices may lead to images from which it was difficult to electronically read check data information, like the legal amount, courtesy amount, MICR line, payee, date, and signature," and that "[f]actors that could lead to this low quality included image skew and poor lighting." Pet. 40 (citing Ex. 1003, 6:37−45, 6:66−7:3, 7:16−18). Petitioner argues that Yoon teaches "solutions to both of these problems by monitoring an image with respect to both skewing and brightness and

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automatically capturing the image when both of these monitoring criteria were satisfied." *Id.* (citing Ex. 1005 ¶¶ 19, 26, 28) (emphasis added).

In Petitioner's view, "brightness and alignment of the image to a reference frame were monitoring criteria." *Id.* at 37 (citing Ex. 1002 ¶¶ 114−116). Petitioner argues that a person of ordinary skill in the art "would have understood that Yoon taught computer-readable instructions being executed by a processor to monitor an image of a document in a field of view of a camera of a mobile device with respect to monitoring criterion using an image monitoring and capture module of the mobile device." *Id*. at 40 (citing Ex. 1002 ¶ 111−120).

As to the "capturing" limitation, Petitioner asserts that Yoon discloses "computer-readable instructions being executed by a processor to capture the image of a business card with the camera when the image of the business card passes the monitoring criterion." *Id*. Also, Yoon discloses that "the image of the business card was *automatically captured* when the brightness environment under which the business card was to be photographed satisfies the brightness monitoring criterion." *Id*. at 40−41 (citing Ex. 1005 ¶¶ 19, 26, Fig. 2, steps 225 and 223) (emphasis added).

Petitioner points out Yoon discloses that once "all the reference boundary lines completely coincide with the boundary lines of the business card as illustrated in FIG. 3D, the portable terminal . . . displays a message informing the user of the start of *automatic photographic of the business card*." *Id*. at 41 (citing Ex. 1005 ¶ 28, Fig. 3D) (emphasis added). According to Petitioner, "Yoon discloses that the image is *automatically*

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captured when the monitoring criterion is satisfied *without human intervention*." *Id*. at 42 (citing Ex. 1005 ¶ 19).

6. Petitioner's Rationale to Combine Nepomniachtchi and Yoon

One of the parties' main disputes is whether Petitioner has articulated a sufficient rationale to combine the teachings of Nepomniachtchi and Yoon, as proposed by Petitioner. Pet. 45−47; PO Resp. 33−54; Reply 10−21; Sur-reply 7−20.

In its Petition, 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 an image of a check using Yoon's alignment guide*." Pet. 45 (emphasis added).

Petitioner acknowledges that Nepomniachtchi does not teach: (1) "projecting an alignment guide in the display of the mobile device," (2) "monitoring the alignment of the check with the alignment guide," and (3) "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 argues 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 ¶ 98).

According to Petitioner, one of ordinary skill in the art "would have been motivated to combine these references from Nepomniachtchi's teaching that capturing an image with a mobile device might cause one of

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several defects that would cause the image to be of low quality and make it difficult to electronically process the check." *Id*. at 45 (citing Ex. 1003, 6:53−56, 6:67−7:3, 7:51−52). Petitioner explains that "[d]efects that might occur from capturing the image with a mobile device included a poorly aligned image and a poorly lit image." *Id*. (citing Ex. 1003, 7:10−14, 7:27−38). Petitioner acknowledges that "Nepomniachtchi proposed two solutions"—namely, "[t]he first solution was to detect whether the image was of poor quality and prompting the user to take another image," and "[t]he second solution was to process the image to correct the defect." *Id*. at 45−46. Petitioner asserts that, from these teachings, one 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 such an artisan would have been "*motivated to minimize the need for this algorithm*," citing Dr. Alexander's testimony for support. *Id*. at 46 (citing Ex. 1002 ¶¶ 99−100).

In addition, Petitioner argues that one 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 46 (citing Ex. 1002 ¶ 101) (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.* (citing Ex. 1005 ¶ 7) (emphasis added).

Petitioner further contends that an ordinarily skilled artisan "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.* (citing Ex. 1002, ¶ 101). Petitioner contends that such an artisan "therefore would have been motivated to combine Nepomniachtchi's mobile phone check imaging embodiment with Yoon's technique for aligning a document with a mobile device camera *to obtain a good, well-aligned photograph of a document*." *Id.* at 46−47 (emphasis added).

7. Discussion

Patent Owner counters that Petitioner fails to articulate an adequate motivation to combine Nepomniachtchi and Yoon to arrive at the claimed invention. PO Resp. 33−54. Based on the totality of this entire trial record, we agree with Patent Owner that Petitioner does not to articulate an adequate reason to combine the teachings of Nepomniachtchi and Yoon, as proposed by Petitioner.

In its Petition, Petitioner essentially argues that one of ordinary skill in the art would have been motivated to combine Nepomniachtchi and Yoon to: (1) reduce the computational burden; (2) ensure that the check was properly aligned; and (3) minimize the need to ask the user to retake the photo. Pet.

45−47. We address below each of these theories advanced by Petitioner in turn, along with its arguments in the Reply.

a. The combination allegedly would reduce the computation burden

In its Petition, 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, citing to Dr. Alexander's testimony for support. Pet. 46 (citing Ex. 1002 ¶¶ 99−101) (emphases added). Dr. Alexander testifies that "Yoon presented a viable means of *reducing the burden of computations performed by the mobile device.*" Ex. 1002 ¶ 101 (emphasis added).

Patent Owner counters that the combination would *increase*, not reduce, the computational burden on the mobile device. PO Resp. 36−42; Sur-reply 10−20; Ex. 2032 ¶ 30.

We agree with Patent Owner, and we are not persuaded by Petitioner's argument and Dr. Alexander's testimony. Petitioner fails to recognize that Nepomniachtchi's image correction processing is performed on the *server*, so that any reduction of the correction processing would result in an efficiency gain on the server, not the mobile device as alleged by Petitioner and Dr. Alexander. Petitioner and Dr. Alexander also ignore the *additional computational burden on the mobile device* caused by

implementing Yoon's pre-capture monitoring and auto-capturing features on the mobile device.

At the outset, Dr. Alexander's testimony does not support Petitioner's argument. Ex. 1002 ¶¶ 99−101. Dr. Alexander does not explain how implementing Yoon's monitoring and capturing features on the mobile device in Nepomniachtchi would reduce the computation burden on the mobile device. *Id*. ¶¶ 99−101. Indeed, Dr. Alexander admits during cross-examination that he did not make a burden comparison on the processor of the mobile device between Yoon's and Nepomniachtchi's systems. Ex. 2039, 67:20−24 ("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*." (emphasis added)). The U.S. Court of Appeals for the Federal Circuit ("Federal Circuit") has "repeatedly recognized that conclusory expert testimony is inadequate to support an obviousness determination on substantial evidence review." *TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352 (Fed. Cir. 2019); *see also InTouch Techs., Inc. v. VGO Commc'ns, Inc.*, 751 F.3d 1327, 1349 (Fed. Cir. 2014) (reversing district court's judgment of invalidity because the expert testimony "failed to provide any meaningful explanation for why one of ordinary skill in the art would be motivated to combine these references at the time of this invention"). Therefore, we find Dr. Alexander's testimony "Yoon presented a viable means of reducing the burden of computations performed by the mobile device" conclusory and,

thus, inadequate to support Petitioner's motivation to combine Yoon with Nepomniachtchi. Ex. 1002 ¶ 101.

Significantly, Petitioner's argument rests on the premise 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 12−15; *see also* Pet. 45−47; Ex 1002 ¶¶ 99−101. Nepomniachtchi, however, teaches using the *server* to perform the correction step in its preferred embodiment. Ex. 1003, 10:17−20, 10:55−56. Notably, Nepomniachtchi 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." *Id.* Any reduction in the correction processing would result in an efficiency gain at the *server*, not the mobile device. Therefore, Petitioner does not explain sufficiently how adding Yoon's monitoring and capturing features on the mobile device would reduce the computation burden on the mobile device. Pet. 45−47

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, 10:21−25. However, the Petition makes no reference to this statement or those embodiments, either in its discussion of the claim limitations or in its motivation to combine. Pet. 36−47, 56.

To be clear, "[i]n an inter partes review, the petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence." 35 U.S.C. § 316(e). "[T]he burden of proof is on the petitioner to prove unpatentable those issued claims that were actually challenged in

the petition for review and for which the Board instituted review." *Nike, Inc. v. Adidas AG*, 812 F.3d 1326, 1334 (Fed. Cir. 2016), *overruled on other grounds by Aqua Prods., Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017) (en banc). The Petition itself is required to identify with particularity the specific portions of the evidence that supports the grounds for each challenged claim. 35 U.S.C. § 312(a)(3); 37 C.F.R. § 42.104(b)(5) (The petition must identify "the relevance of the evidence to the challenge raised, including identifying specific portions of the evidence that support the challenge.").

In its Reply, Petitioner improperly attempts to change its position, suggesting that Nepomniachtchi's correction processing is performed on the mobile device. Reply 12−15. Petitioner had an opportunity to present its argument in its Petition 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-Systems, 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")[4] 74 (Nov. 2019) (guidance for filing a reply); *see also* 84 Fed. Reg. 64,280 (Nov. 21, 2019).

Accordingly, we decline to consider Petitioner's new argument presented for the first time in its Reply 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. 45−47; Ex. 1002 ¶¶ 99−101. 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 ¶ 100 (emphasis added). Moreover, Patent Owner's declarant, Mr. Stephen Craig Mott, 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

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[4] Available at https://www.uspto.gov/TrialPracticeGuideConsolidated.

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 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 ¶ 100; Ex. 2032 ¶ 30.

In its Reply, Petitioner 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 14 (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.'" Reply 12. 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 the image. Sur-reply 11 (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. *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 at the server, by performing the image quality analysis on the mobile device.

Therefore, we are not persuaded by Petitioner's argument that Nepomniachtchi teaches away from its server embodiment. Reply 14. For the foregoing reasons, we also 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 12–14; *see also* Pet. 45–47; Ex. 1002 ¶¶ 99–101.

In addition, Petitioner ignores the additional burden on Nepomniachtchi's mobile device caused by implementing Yoon's monitoring and capturing features on the mobile device. Pet. 45–47. Dr. Alexander admits that one of ordinary skill in the art at the time of the invention would have been concerned with adding computational burden on the mobile device because it may lead to slower response times and user dissatisfaction. Ex. 1002 ¶ 100. Yet, Petitioner does not explain sufficiently why such an artisan would have been motivated to increase computational burden on Nepomniachtchi's mobile device by implementing Yoon's monitoring and capturing features. Pet. 45–47.

In its Reply, Petitioner argues that "[i]t is not true that combining Nepomniachtchi and Yoon would necessarily increase the computational burden on the mobile device," because Patent Owner's argument is based on

the assumption that "the combined system must check the image for proper alignment thirty times a second," and that Patent Owner suggests "no reason why a [person of ordinary skill in the art (POSITA)] could not design the system to examine one single frame to provide feedback to the user." Reply 14−15 (citing PO Resp. 36, 41).

Petitioner's arguments are misplaced. Petitioner improperly attempts to shift the burden to the Patent Owner. "In an *inter partes* review, the burden of persuasion is on the petitioner to prove 'unpatentability by a preponderance of the evidence,' 35 U.S.C. § 316(e), and that burden never shifts to the patentees." *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). Even in the context of the burden of production, "no burden shifts from the patent challenger to the patentee . . . where the only issues to be considered are . . . whether there would have been a motivation to combine the prior art, and whether that combination would render the patented claims obvious." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1375−76 (Fed. Cir. 2016).

Petitioner also ignores Patent Owner's supporting evidence and Yoon's teachings. Notably, Mr. Mott, testifies that "incorporating Yoon's automatic capture techniques into Nepomniachtchi would add CPU overhead to the system," and "[i]n order to determine when to capture the check image, the system would have to monitor, in real-time, the quality of the check image in view." Ex. 2032 ¶ 30. Mr. Mott also testifies that "pre-capture check image quality analysis [in Yoon] is more computationally intensive than post-capture check image quality analysis [in Nepomniachtchi], because it must be performed *repeatedly* . . . , as opposed

to analyzing a single, captured check image." *Id.* (emphasis added). To be clear, Mr. Mott does not state that "this analysis *must* happen thirty times a second," but rather "*for example*, 30 times per second, when analyzing a 30 frames-per-second live camera preview." *Id.* (emphasis added).

We credit Mr. Mott's testimony (*id.*) as it is consistent with Yoon. Ex. 1005 ¶¶ 19−28, Figs. 2, 3A−3D. Notably, Yoon teaches "[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 for the characteristics and size of the display unit 106." *Id.* ¶ 21 (emphasis added). Yoon's 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. *Id.* ¶¶ 24−28, Figs. 2, 3A−3D.

In short, we are not persuaded by Petitioner's argument that Patent Owner's argument is based on the assumption that "the combined system must check the image for proper alignment thirty times a second." Reply 14−15.

Petitioner's argument that Patent Owner suggests "no reason why a POSITA could not design the system to examine one single frame to provide feedback to the user" is also misplaced. Reply 15. "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, 1074 (Fed. Cir. 2015). In its Petition, Petitioner does not propose to modify

Nepomniachtchi's system to examine one single frame to provide feedback to the user, much less articulates a motivation to make such a modification. Pet. 36−43, 45−47, 56. Petitioner's "one single frame" argument also contradicts Yoon's teaching—namely, "[t]he image processor 104 processes the digital data received from the camera unit 102 in *units of frames*." Ex. 1005 ¶ 21.

Neither Petitioner nor Dr. Alexander explains sufficiently how adding Yoon's monitoring and capturing features on Nepomniachtchi's mobile device would not necessarily increase the computational burden on the mobile device. Pet. 45−47; Ex. 1002 ¶¶ 99−101; Reply 14−15. 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 14−15.

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 12−13 (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 13 (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, 79:24−80:14; Ex. 1051, 27 (Petitioner's Demonstratives) (emphases added).

At the outset, neither the Petition nor Dr. Alexander's original Declaration includes an explanation as to "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." Pet. 36−43, 45−47, 56; Ex. 1002 ¶¶ 99−101 (emphases added). Tellingly, Petitioner's improper new arguments and Dr. Alexander's deposition testimony suggest that the Petition itself lacks sufficient particularity as to how the prior art teachings were combined, and how the proposed combination would lead to greater computation efficiency, as alleged by Petitioner. Petitioner could have presented those arguments in its Petition, but chose not to.

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-Systems*, 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 rational 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, 79:24–80:14; 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. Acceleron, LLC*, 884 F.3d 1364, 1369 (Fed. Cir. 2018); *see also* CTPG 85 (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'Oreal, S.A.*, 129 F.3d 588, 595 (Fed. Cir. 1997); *see also In re Pearson*, 949 F.2d 1399, 1405 (CCPA 1974) (unsupported attorney argument in a brief cannot take the place of evidence). 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 13; Ex. 2039, 98:11−99:22; Tr. 15:18−18:15, 27:20−25, 79:24−80:14; Ex. 1051, 27), they 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 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.

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. 36–43, 45–47, 56. In its Petition, Petitioner argues 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. 45 (emphasis added). Hence, Petitioner's new arguments and Dr. Alexander's deposition testimony regarding that "it is the user"—not the processor—that "corrects misalignment by adjusting the position and orientation of the physical copy to fit the alignment guide" 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 12. 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." Reply 11. 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. 45−47). Petitioner's argument amounts to nothing more than impermissible hindsight. *KSR,* 550 U.S. at 421 (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")); *Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1379 (Fed. Cir. 2012) ("[T]he need for *Graham* findings can be important to ward against falling into the forbidden use of hindsight."); *In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967) (an obviousness analysis "may not . . . resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis").

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

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conclusion of obviousness." *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 997, 998 (Fed. Cir. 2006)).

b. *The combination allegedly would ensure that the check was properly aligned*

In its Petition, Petitioner argues that a person of ordinary skill in the art would have been motivated to combine Nepomniachtchi and Yoon "to ensure that the check was properly aligned with the camera of the mobile phone when the picture of the check was taken." Pet. 45−47.

Patent Owner counters that the question "is not whether adding Yoon's *alignment guide* to Nepomniachtchi would result in better-aligned check images" because Petitioner's "theory is that the combination would '*automatically capture* an image of a check using Yoon's alignment guide.'" PO Resp. 42 (quoting Pet. 45).

We agree with Patent Owner and we are not persuaded by Petitioner's argument. It is well established that the reason for combining references in an obviousness analysis cannot focus on generic statements divorced from the prior art elements, such as the generic desire to "build something better" or to make it "more efficient, cheaper, or . . . more attractive to your customers." *ActiveVideo Networks, Inc. v. Verizon Comm'ns., Inc.*, 694 F.3d. 1312, 1328 (Fed. Cir. 2012).

Here, Petitioner concedes that Nepomniachtchi does not teach:
(1) "projecting *an alignment guide* in the display of the mobile device,"
(2) "*monitoring the alignment* of the check with the alignment guide," and
(3) "*automatically capturing an image* of the check when it was aligned with

the alignment guide." Pet. 45 (emphases added). Petitioner relies upon Yoon to teach "using a mobile device to perform all of these steps when capturing the image of a business card." *Id*. In particular, Petitioner relies upon Yoon to teach an alignment guide as well as "computer-readable instructions being executed by *a processor to monitor an image* of a document in a field of view of a camera of a mobile device with respect to monitoring criterion *using an image monitoring and capture module of the mobile device*," and "*to capture the image of the check* with the camera when the image of the check passes the monitoring criterion," as recited in claims 1 and 9. *Id*. at 36−43, 45−47, 56 (citing Ex. 1005 ¶¶ 19−22, 24−26, 28, Figs. 2, 3A, 3D) (emphases added).

Petitioner's alleged benefit "to ensure the check was properly aligned" is merely a generic statement for using an alignment guide. According to Petitioner, "the combination leads to greater computational efficiency . . . by moving the image correction step into the *user's brain*." Reply 13 (emphasis added). And Dr. Alexander testifies during cross-examination that it is the user who adjusts the position and orientation of the physical copy to fit the alignment guide. Ex. 2039, 98:11−99:22. Petitioner's argument and Dr. Alexander's testimony suggest that any computation efficiency gained in the combination would be a result of the alignment guide, not Yoon's monitoring and auto-capturing features.

Significantly, Petitioner does not explain with particularity why a relevant artisan would be motivated to add Yoon's monitoring and auto-capturing features to Nepomniachtchi's mobile device, which would increase the computation burden on the mobile device and may lead to

slower response times and user dissatisfaction. Pet. 45−47. As discussed above, implementing Yoon's monitoring and capturing features on the mobile device in Nepomniachtchi also would increase the computation burden on the mobile device.

Mr. Mott testifies that "incorporating Yoon's automatic capture techniques into Nepomniachtchi would add CPU overhead to the system" and that "[i]n order to determine when to capture the check image, the system would have to monitor, in real-time, the quality of the check image in view." Ex. 2032 ¶ 30. Mr. Mott also testifies that "pre-capture check image quality analysis [in Yoon] is more computationally intensive than post-capture check image quality analysis [in Nepomniachtchi], because it must be performed *repeatedly* . . . , as opposed to analyzing a single, captured check image." *Id.* (emphasis added).

We credit Mr. Mott's testimony (*id.*), as it is consistent with Yoon. Ex. 1005 ¶¶ 19−22, 24−26, 28, Figs. 2, 3A, 3D. Notably, Yoon repeatedly checks whether the brightness is appropriate and whether "the reference boundary lines coincides with the boundary lines of the business card," until the brightness is appropriate and "all the reference boundary lines still coincide with all the boundary lines of the business card." *Id.*

Therefore, implementing Yoon's monitoring and capturing features on the mobile device in Nepomniachtchi would increase the computation 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 ¶ 100 (emphasis added).

In short, even if a relevant artisan would have been motivated to use Yoon's alignment guide, Petitioner fails to articulate with particularity why a relevant artisan would have been motivated to add Yoon's monitoring and capturing features to Nepomniachtchi's mobile device, which would increase the computation burden on the mobile device, and may lead to slower response times and user dissatisfaction. *See Nuvasive*, 842 F.3d at 1382. Petitioner's generic assertion "to ensure that the check was properly aligned" for using an alignment guide, without more, is insufficient as a motivation for implementing Yoon's monitoring and capturing features on Nepomniachtchi's mobile device. *See ActiveVideo*, 694 F.3d. at 1328.

In its Reply, Petitioner argues that "the petition also explains a POSITA 'would have been motivated to add to Nepomniachtchi the techniques of Yoon to solve for checks the same problems Yoon solved for business card,'" and that Patent Owner "has never even tried to rebut these other reasons for the combination." Reply 15 (citing Pet. 46).

Petitioner's argument is misplaced. "[T]he burden of proving invalidity in an IPR remains on the petitioner throughout the proceeding." *Fanduel Inc. v. Interactive Games*, 966 F.3d 1334, 1341 (Fed. Cir. 2020) (citing 35 U.S.C. § 316(e)). "[A] patentee technically has no 'burden' to do anything to defend the validity of its patent other than hold the patent challenger to its own burden of persuasion." *E.I. DuPont de Nemours & Co. v. Synvina C.V.*, 904 F.3d 996, 1008 (Fed. Cir. 2018).

In its Petition, Petitioner does not identify with particularity the problems or variance in Yoon that would motivate a relevant artisan to modify Nepomniachtchi, apart from "to obtain a good, well-aligned

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photograph of a document." Pet. 46–47. "[T]o obtain a good, well-aligned photograph" essentially is the same as "to ensure that the check was properly aligned," which is nothing more than a generic statement for using an alignment guide. Such a generic statement is insufficient as a motivation for adding Yoon's monitoring and capturing features on Nepomniachtchi's mobile device, which would increase the computation burden on the mobile device and may lead to slower response times and user dissatisfaction. *See ActiveVideo*, 694 F.3d at 1328.

In its Reply, Petitioner also argues that Patent Owner "acknowledges that the combination offers a benefit (although USAA asserts it is 'marginal' and 'minimal')." Reply 10 (citing PO Resp. 50). However, Patent Owner's statement relied upon by Petitioner is silent as to implementing Yoon's monitoring and capturing features on Nepomniachtchi's mobile device. PO Resp. 50. Merely acknowledging the marginal benefit for adding an alignment guide is insufficient as a motivation for implementing Yoon's monitoring and capturing features on Nepomniachtchi's mobile device, which would increase the computation burden on the mobile device and may lead to slower response times and user dissatisfaction. *See ActiveVideo*, 694 F.3d at 1328.

In its Reply, Petitioner also argues that the fact "that Nepomniachtchi had alternative solutions does not mean it would not be beneficial to also include Yoon's solution, as the Board has recognized," citing to the Institution Decision for support. Reply 14 (citing Dec. 54).

Petitioner's reliance on our Institution Decision is misplaced. "[T]he decision to institute and the final written decision are 'two very different

analyses,' and each applies a 'qualitatively different standard.'" *Magnum Oil*, 829 F.3d at 1376 (quoting *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016)); *also compare* 35 U.S.C. § 314(a), *with id.* § 316(e). "[T]he different standards of proof required to institute versus to invalidate permit the Board to adopt different views of the sufficiency of a petitioner's asserted obviousness arguments in its initial versus final decisions." *Fanduel Inc. v. Interactive Games*, 966 F.3d 1334, 1340 (Fed. Cir. 2020). "There is nothing inherently inconsistent about the Board instituting IPR on obviousness grounds and then ultimately finding that the petitioner did not provide preponderant evidence that the challenged claim was obvious." *Id.* "[T]he Board has an obligation to assess the question anew after trial based on the totality of the record." *Magnum Oil*, 829 F.3d at 1377.

More importantly, a generic statement for using an alignment guide, without more, is insufficient to explain why a relevant artisan would have been motivated to add Yoon's monitoring and capturing features on Nepomniachtchi's mobile device, which would increase the computation 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 ¶ 100. As discussed above, Mr. Mott testifies that incorporating Yoon's features would add CPU overhead. Ex. 2032 ¶ 30. Based on the totality of this trial record, we determine that Petitioner has not met its burden to articulate a sufficient reason why an ordinarily skilled artisan would have been motivated to

implement Yoon's monitoring and capturing features on Nepomniachtchi's mobile device.

Petitioner also argues that a relevant artisan "would not have been discouraged from combining Nepomniachtchi and Yoon," and that Yoon addresses the image defects identified by Nepomniachtchi. Reply 16–19.

The mere fact that Yoon addresses the identified image defects, without more, does not explain why a relevant artisan would have been motivated to implement Yoon's monitoring and capturing features in Nepomniachtchi, which would increase the computation burden on the mobile device and may lead to slower response times and user dissatisfaction. As the Supreme Court has explained "[a] patent composed of several elements is not proved obvious by merely demonstrating that each of its elements was, independently, known in the prior art." *KSR*, 550 U.S. at 418. Moreover, "a conclusory assertion with no explanation is inadequate to support a finding that there would have been a motivation to combine" because "[t]his type of finding, without more, tracks the *ex post* reasoning *KSR* warned of and fails to identify and actual *reason* why a skilled artisan would have combined the elements in the manner claimed." *In re Van Os*, 844 F.3d 1359, 1361–62 (Fed. Cir. 2017) (citing *KSR*, 500 U.S. at 418, 421).

In sum, Petitioner fails to articulate why a relevant artisan would have been motivated to combine Nepomniachtchi and Yoon to arrive at the claimed invention. We are not persuaded by Petitioner's argument that a relevant artisan "would not have been discouraged from combining Nepomniachtchi and Yoon," and that Yoon addresses the image defects identified by Nepomniachtchi. Reply 16–19.

Petitioner also argues that "a POSITA would have recognized that Nepomniachtchi's solution was inadequate," and, "[f]or example, images could be so poorly aligned that not even Nepomniachtchi's correction algorithm could fix them," citing to Dr. Alexander's cross-examination testimony for support. Reply 11 (citing Ex. 2039, 105:18−109:2 ("Nepomniachtchi cannot achieve perfection with his algorithms")).

However, Dr. Alexander's testimony merely addresses a question regarding image distortions. Ex. 2039, 105:18−109:2. Petitioner fails to consider that Nepomniachtchi as a whole already provides a solution that addresses image distortions. Nepomniachtchi teaches that the "perspective distortion may occur because an image is taken using a camera that is placed at an angle to a document rather than *directly above the document*," and "[w]hen directly above a rectangular document, it will generally *appear to be rectangular*." Ex. 1003, 8:39−43 (emphases added). Nepomniachtchi also discloses that the image is automatically mapped onto a rectangular bitmap in order to remove or decrease the perspective distortion. *Id*. at 8:54−63. Nepomniachtchi makes clear that its solution collectively includes: (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,

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de-skew, perspective distortion correction, cropping, etc." *Id*. at 7:55−57, 8:39−43, 8:54−63, 9:50−54, 10:9−20, 10:40−59, 11:29−30.

Neither Petitioner nor Dr. Alexander explains why the user would not have placed the camera directly above the document to avoid document distortion, as taught by Nepomniachtchi. Moreover, 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. Dr. Alexander also admits that the user may correct "misalignment by adjusting the position and orientation of the physical copy to fit the alignment guide." *Id*. at 98:25−99:5. Hence, even if a relevant artisan would have been motivated to use an alignment guide, Petitioner and Dr. Alexander do not explain why such an artisan would have been motivated to add Yoon's monitoring and capturing features on Nepomniachtchi's mobile device, which would increase the computation burden on the mobile device and may lead to slower response times and user dissatisfaction. Therefore, we are not persuaded by Petitioner's argument that "a POSITA would have recognized that Nepomniachtchi's solution was inadequate." Reply 11.

For the foregoing reasons, Petitioner's generic assertion "to ensure that the check was properly aligned" for merely using an alignment guide is insufficient as a motivation for adding Yoon's monitoring and capturing features on Nepomniachtchi's mobile device, which would increase the computation burden on the mobile device and may lead to slower response times and user dissatisfaction. *See ActiveVideo*, 694 F.3d. at 1328; *Nuvasive*, 842 F.3d at 1382.

c. The combination allegedly would minimize the need for retake

Petitioner argues that a person of ordinary skill in the art would have minimized the need for "prompting user to retake the photo," citing Dr. Alexander's testimony for support. Pet. 46 (citing Ex. 1002 ¶ 101).

Patent Owner counters that "the proposed combination would (a) not reduce these errors, as Nepomniachtchi already addresses them; and (b) introduce new, more problematic errors into the system." Sur-reply 15; *see also* PO Resp. 44−50.

We agree with Patent Owner and we are not persuaded by Petitioner's argument. At the outset, Petitioner's argument is conclusory. The cited portion of Dr. Alexander's Declaration (Ex. 1002 ¶ 101) proffers no explanation regarding minimizing the need for retake the images, let alone a reason why "prompting user to retake the photo" is a problem such that it would lead a person of ordinary skill in the art to implement Yoon's monitoring and capturing features on Nepomniachtchi's mobile device.

In its Reply, to support its argument, Petitioner directs our attention to Dr. Alexander's deposition testimony that states: "as a person of ordinary skill in the art, I would understand that improvements in alignment made *prior to capture* by Yoon would certainly affect Nepomniachtchi's need to reimage documents." Reply 15 (quoting Ex. 2039, 85:17−20) (emphasis added). However, Dr. Alexander was responding to the question "Do you know whether the Yoon *alignment guide* would actually improve the ability to read the MIRC line?" Ex. 2039, 85:14−16 (emphasis added). Dr. Alexander's testimony is silent as to why a relevant artisan would have

been motivated to implement Yoon's monitoring and capturing features in a mobile device. *Id.*

At best, Dr. Alexander's deposition testimony provides a general reason to use an alignment guide. Such a generic statement for using an alignment guide, without more, is insufficient as a motivation for implementing Yoon's monitoring and auto-capturing features on Nepomniachtchi's mobile device. *See ActiveVideo*, 694 F.3d. at 1328.

Therefore, neither Dr. Alexander's original Declaration nor his deposition testimony supports Petitioner's argument that a person of ordinary skill in the art would have minimized the need for "prompting user to retake the photo." They also do not support Petitioner's position that such an artisan would have been motivated to add Yoon's monitoring and capturing features on Nepomniachtchi's mobile device, which would increase the computation burden on the mobile device. Dr. Alexander admits that such an 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 ¶ 112.

In sum, Petitioner's argument that a person of ordinary skill in the art would have minimized the need for "prompting user to retake the photo" is conclusory, not supported by Dr. Alexander's testimony or any evidence of record. Pet. 41. An argument of counsel is not evidence. *See Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1042–48 (Fed. Cir. 2017) (holding that attorney argument is not evidence and the Board's adoption of petitioner's brief did not "transform [the petitioner's] attorney argument into

factual findings or supply the requisite explanation that must accompany such findings"). As noted above, 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)). Moreover, "a conclusory assertion with no explanation is inadequate to support a finding that there would have been a motivation to combine" because "[t]his type of finding, without more, tracks the *ex post* reasoning *KSR* warned of and fails to identify and actual *reason* why a skilled artisan would have combined the elements in the manner claimed." *Van Os*, 844 F.3d at 1361−62.

In addition, Petitioner alleges problems with Nepomniachtchi's solutions in attempt to create a motivation to combine the Nepomniachtchi and Yoon. Pet. 45−47. Petitioner 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. *Id*. When evaluating claims for obviousness, "the prior art as a whole must be considered." *In re Hedges*, 783 F.2d 1038, 1041 (Fed. Cir. 1986). "It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." *Id*.

As discussed above, 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) for 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 check and before starting another task; and (3) performing the correction processing on the server to "clean up the image by performing auto-rotate, de-skew, perspective distortion correction, cropping, etc." Ex. 1003, 7:55−57, 8:39−43, 8:54−63, 9:50−54, 10:9−20, 10:40−59, 11:29−30. 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 minimize the number of retakes requested.

Therefore, Petitioner does not provide a reasoned explanation why a relevant artisan, reading Nepomniachtchi as a whole, would have been motivated to minimize the need for retaking the images.

Furthermore, Petitioner admits that "[i]t is true that combining Nepomniachtchi and Yoon would replace the user's judgment about whether the image was aligned." Reply 17.

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. 45−47. 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 45 (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, whether or not 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.

As Patent Owner explains, another fundamental problem with Petitioner's combination is that "incorporating Yoon's automatic capture technique into Nepomniachtchi results in 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. 45.

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.*

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. 47−49. 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*. 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 19. Petitioner's argument is misplaced. For its motivation to combine the teachings of Nepomniachtchi and Yoon, Petitioner asserts in its 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 and *the mobile device would transmit the captured image to a depository*." Pet. 39 (emphasis added). Additionally,

Nepomniachtchi's invention is for capturing suitable check images for deposit. Ex. 1003, code (54), 6:58−61. Petitioner confirms that Nepomniachtchi teaches "using a mobile device to capture the image of a check *for use in a check clearing process*." Pet. 45 (emphasis added). 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. 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. Reply 19.

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." Reply 17−18 (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

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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-Systems*, 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 17. 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. 39 (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 13 ("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. 28:25−29:1. 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 17; 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 11. 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. 45−47; Reply 17−18. 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 ¶ 112.

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 17−18.

In its Reply, Petitioner also argues that it "need not show that Nepomniachtchi's solution for misaligned checks was inadequate." Reply 11−12. We are mindful that the Federal Circuit has held that a petitioner need not prove that there was a known problem with the prior art in order to demonstrate that there was a motivation to combine the references. *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002−03 (Fed. Cir. 2016).

Here, however, Petitioner chose to argue that there were problems with Nepomniachtchi's solutions and those purported problems would have motivated a person of ordinary skill in the art "to minimize the need for geometrical correction algorithm," "to investigate ways to ensure checks were well-aligned with the camera when images were being taken," and "to minimize the need for prompting user to retake photo." Pet. 45−47. As discussed above, Petitioner's arguments are unavailing because Petitioner fails to prove that those purported problems with Nepomniachtchi's solutions existed such that an ordinarily skilled artisan would have been motivated to combine Nepomniachtchi and Yoon to overcome those purported problems.

In short, Petitioner fails to prove the facts that it alleges and the premise it offers for combining Nepomniachtchi and Yoon. Consequently, we determine that Petitioner has failed to articulate an adequate reason to combine Nepomniachtchi and Yoon to arrive at the claimed invention. *See Arctic Cat Inc. v. Polaris Industries, Inc.*, 795 Fed. Appx. 827 (Fed. Cir. 2019) ("Although a challenger to a patent is not required to prove there was a known problem with the prior art . . . , the Board did not misapply the law by requiring Arctic Cat to prove the facts that it alleged." (internal citation omitted)).

For the foregoing reasons, Petitioner fails to show that a person of ordinary skill in the art would have had a reason to minimize the need for prompting user to retake the photo such that he or she would have been motivated to implement Yoon's monitoring and capturing features on Nepomniachtchi's mobile device. Petitioner's argument 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" is conclusory, not supported by Dr. Alexander's testimony or the prior art disclosures. "To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements." *Magnum Oil*, 829 F.3d at 1380; *see also Rovalma, S.A. v. Böhler-Edelstahl GmbH & Co. KG*, 856 F.3d 1019, 1025–26 (Fed. Cir. 2017) (vacating an obviousness finding where it "did not cite any evidence, either in the asserted prior-art references

or elsewhere in the record, with sufficient specificity for us to determine whether a person of ordinary skill in the art would have been so motivated").

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.

8. Conclusion on Obviousness

For the foregoing reasons, we determine that Petitioner has not established by a preponderance of the evidence that claims 1−13 are unpatentable under § 103(a) as obvious over Nepomniachtchi, Yoon, and Acharya.

E. Patent Owner's Motion to Exclude

Patent Owner filed a Motion to Exclude Evidence (Paper 27), seeking to exclude Petitioner's Exhibits 1008, 1013−1015, 1019−1021, and 1031.

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 1−13 of the '571 patent are unpatentable.

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

III. CONCLUSION

For the foregoing reasons, we conclude that Petitioner has not established by a preponderance of the evidence that claims 1−13 of the '571 patent are unpatentable.

IV. ORDER

For the foregoing reasons, it is

ORDERED that claims 1−13 of the '571 patent have not been shown to be unpatentable; 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.

In summary:

Claim(s)	35 U.S.C. §	References	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1−13	103(a)	Nepomniachtchi, Yoon, Acharya		1−13
Overall Outcome				1−13

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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
> 600 Dulany Street
> Alexandria, Virginia 22314

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

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