

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WELLS FARGO BANK, N.A.
Petitioner,

v.

UNITED SERVICES AUTOMOBILE ASSOCIATION,
Patent Owner.



TOPICS

Summary

Check Image Quality Is Critical

Claim Construction And Why It Matters

No Motivation To Combine Nepomniachtchi And Yoon

Yoon Cannot Be Implemented By a POSA

No Motivation To Add Dance

No Motivation To Add Cho

Objective Indicia Of Non-Obviousness

Nepomniachtchi System Is Missing At Least Two Elements



Christopher Pratt
Wells Fargo's Expert

**WELLS
FARGO**

1. Post-capture image quality analysis only

Q. So within the Nepomniachtchi reference itself, that system only analyzes check images after they have been captured by the mobile device camera, right?

A. Correct.

Ex. 2019 at 47:20-24

2. Manual capture based on human judgment

Petition: “Nepomniachtchi does not disclose that the [image capture] process occurs ‘automatically’”

Pet. at 29

POSA Would Avoid Yoon Pre-Capture Monitoring

- **Increased mobile CPU burden**

- Pre-capture analysis has significant CPU mobile burden (Ex. 2001 at ¶ 30)
- Post-capture just as effective (Ex. 2002 at 90:20-91:6)
- Post-capture analysis still must occur (IPR2020-00090 Reply at 11, 19; IPR2020-00090 Reply at 11, 19; IPR2020-00092 Reply at 11)
- Post-capture correction performed on server (no burden) (Ex. 1006 at 10:5-9, 41-48; Ex. 2016 ¶ 29; Ex. 2019 at 100:16-21)

- **Alignment and brightness**

- Not sufficient for machine readable check image (Ex. 2001 ¶¶ 27, 32; Ex. 2002 at 119:7-120:7; Ex. 2019 at 106:6-9, 20-24)

- **Negative impact on user experience** (Ex. 2016 ¶¶ 13, 15; Ex. 2019 at 40:13-15)

- Slow performance causes user frustration (Ex. 2016 at ¶¶ 25-31)

Even If Pre-Capture Monitoring Used, POSA Would Avoid Yoon Auto-Capture

- **Yoon auto-capture precludes human judgment**
 - Human judgment believed to ensure high quality check image (Ex. 2002 at 45:19-46:6, 120:22-121:3)
 - Yoon criteria not sufficient to ensure deposit success (Ex. 2001 ¶¶ 27, 32; Ex. 2002 at 119:7-120:7; Ex. 2019 at 106:6-9, 20-24)
 - Yoon pre-quality image capture analysis does not require auto-capture (Ex. 2001 at ¶ 30)
- **Yoon auto-capture increases mobile CPU burden**
 - Yoon requires real-time analysis of images. (Ex. 2001 at ¶ 30; Ex. 1008 at [0019]-[0021])
- **Yoon auto-capture increases check image error** (Ex. 2001 at ¶ 27; Ex. 2016 at ¶ 25-31)

Objective Evidence Establishes Non-Obviousness

- **Industry embraced manual capture and post capture analysis**
 - Mitek implemented Nepomniachtchi in commercial product (Ex. 2009 at ¶ 73; Ex. 2016 at ¶ 7)
 - Yoon pre-dated Nepomniachtchi and mobile check deposit (Ex. 1006; Ex. 1008)
- **Industry praise when USAA introduced**
 - Pre-capture image quality analysis (Ex. 2031)
 - Automatic capture (Ex. 2017 at 107:22-24; Ex. 2021 at 99:23-93:8; Ex. 2031)
- **Dramatic increase in performance at 2013 USAA launch** (Ex. 2024 at ¶ 5)
- **Mitek did not launch pre-capture image quality analysis and automatic capture until 2014** (Ex. 2016 at ¶ 7; Ex. 2031)

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A POSA Modifying Nepomniachtchi Cares About Check Image Quality

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PATENT AND TRADEMARK OFFICE



“Nepomniachtchi’s invention is for capturing ***suitable check images for deposit***. [citation omitted] Nepomniachtchi identifies a list of criteria for capturing suitable check images for deposit. [citation omitted] 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.”

Wells Fargo, N.A. v. United Services Automobile Association, IPR2019-01081, Paper 39 at 40 (P.T.A.B. Jan. 11, 2021)

Check Image Deposit Requires Machine Data Extraction



Christopher Pratt
Wells Fargo's Expert

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Pratt Declaration:

57. From Nepomniachtchi, a POSITA would understand the need for efficiently determining whether a captured (or live) image has sufficient quality for automated processing. A POSITA would also understand the benefits of performing quality monitoring on the mobile device to more efficiently allow a user to obtain a quality image.

Ex. 1003 at ¶ 57

Check Image Deposit Requires Machine Data Extraction



Stephen Mott
USAA's Expert



Mott Declaration:

27. Examining alignment and brightness alone is not sufficient to determine whether a check image will be suitable for deposit processing. It was well known in the art, in 2009, that many image quality factors were important in evaluating whether a check image would be suitable for processing and successful deposit. This is reflected in Nepomniachtchi's teachings. For example, Nepomniachtchi lists a number of factors that may impact the ability of a check processing system to read critical deposit information from the received check image:

Ex. 2001 at ¶ 27

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Claim Construction Dispute

“Adjustable” or “Adapted” Alignment Guide in ’197 Patent

Claim Language

1. A system for transmitting an image, comprising:
a mobile device having a camera, a display and a processor,
wherein the processor is configured to:
display a field of view of the camera on the display;

generate an alignment guide associated with the field of
view of the camera, the alignment guide including a
shape adjustable to align with an instrument in the field
of view;

the field of view;
determine whether the at least one feature aligns with the
alignment guide;
automatically capture an image when the at least one fea-
ture is determined to align with the alignment guide; and
transmit the captured image from the mobile device to a
server via a communication pathway between the
mobile device and the server.

13. A non-transitory computer-readable medium compris-
ing instructions for transmitting an image, the instructions
being executed by a processor of a mobile device to:
generate an alignment guide associated with a field of view

generate an alignment guide associated with a field of view
of a camera of the mobile device, the alignment guide
including a shape extending a majority of a width or a
length of the field of view, and the shape adapted to align
with an instrument in the field of view;

alignment guide;
automatically capturing an image when the feature is deter-
mined to align with the alignment guide; and
transmit the image from the mobile device to a server.

“Adjustable” or “Adapted” Alignment Guide Is NOT Same As “Selectable” Alignment Guide

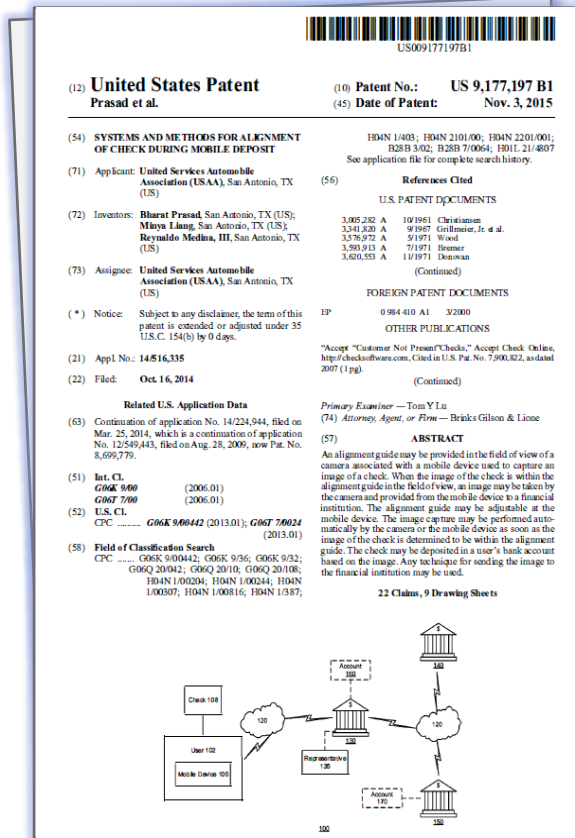
The alignment guide 263 may be adjustable by the user 102

via one or more adjustment buttons, selectors, arrows, or other indicators (shown in FIG. 4 as an adjustment button 280 of the camera 207). For example the user 102 may use the adjustment button 280 to change the shape, aspect ratio, and/or the location of the alignment guide 263 in the field of view of the camera 207. In an implementation, the user may select the alignment guide 263 using any known selection techniques (e.g., moving a cursor to the alignment guide 263, highlighting or clicking on the alignment guide 263, selecting the alignment guide 263 from a pull down menu of the camera 207 or the mobile device 106) and may use the adjustment button 280 to modify the alignment guide 263. In an imple-

Selection of alignment guide to display

Adjustment of displayed alignment guide

'197 Patent at 6:66-7:5



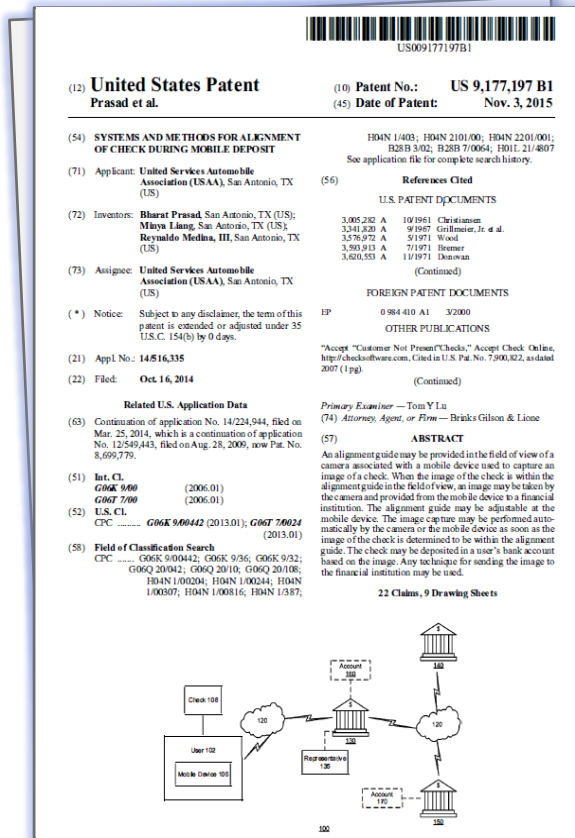
“Adjustable” or “Adapted” Alignment Guide Is NOT Same As “Selectable” Alignment Guide

13. A non-transitory computer-readable medium comprising instructions for transmitting an image, the instructions being executed by a processor of a mobile device to:

generate an alignment guide associated with a field of view of a camera of the mobile device, the alignment guide including a shape extending a majority of a width or a length of the field of view, and the shape adapted to align with an instrument in the field of view;

monitor at least one feature of the instrument in the field of view of the camera;

22. The non-transitory computer-readable medium of claim 13, wherein the shape is selectable to match a shape of the instrument.



Full Record Developed At Trial

Record At Initiation

“Watanabe’s teachings, however, more closely resemble the embodiment of the adjustable alignment guide in which a user selects from a plurality of alignment guides stored in the camera or mobile device.”

IPR2020-00090 ID at 35

Record At Trial

Petitioner’s expert admits “adjustable” or “adapted” guide means “stretching or shrinking the alignment guide to fit the document”

(Ex. 2019, 79:8-11)

Full Record Developed At Trial

Record At Initiation

“USAA does not address why Watanabe’s cropping tool would not qualify as an ‘alignment guide’ that is ‘adjustable,’ as these terms are used in the context of the ’197 patent.”

IPR2020-00090 Patent ID, at 36

Record At Trial

- No evidence Watanabe’s alignment guide is adjustable after display
- No evidence of adjustable cropping tool in Watanabe

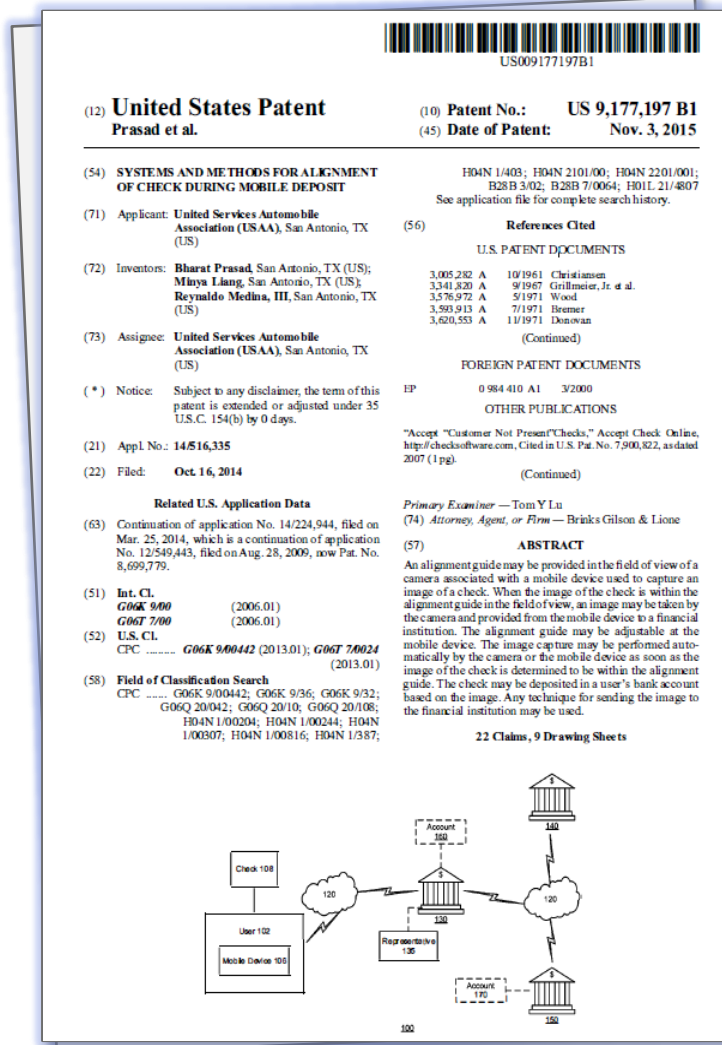
“Adjustable” or “Adapted” Alignment Guide Is NOT Same As “Selectable” Alignment Guide

“[A]lignment guide 263 may be *adjustable* by the user 102 via one or more adjustment buttons, selectors, arrows, or other indicators (shown in FIG. 4 as an adjustment button 280 of the camera 207).”

’197 Patent at 6:60-63

“[T]he user 102 may use the **adjustment** button 280 to **change** the shape, aspect ratio, and/or the location of the alignment guide 263 in the field of view of the camera 207.”

’197 Patent at 6:63-66



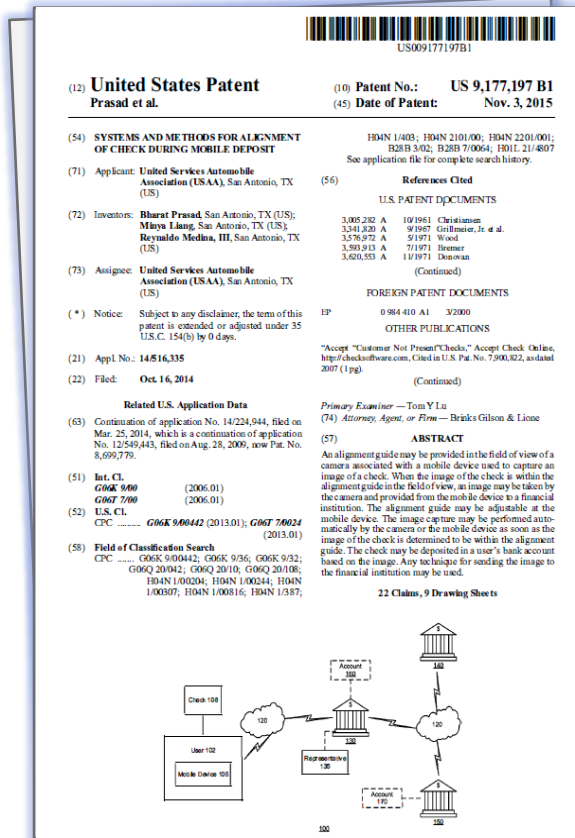
“Adjustable” or “Adapted” Alignment Guide Is NOT Same As “Selectable” Alignment Guide

13. A non-transitory computer-readable medium comprising instructions for transmitting an image, the instructions being executed by a processor of a mobile device to:

generate an alignment guide associated with a field of view of a camera of the mobile device, the alignment guide including a shape extending a majority of a width or a length of the field of view, and the shape adapted to align with an instrument in the field of view;

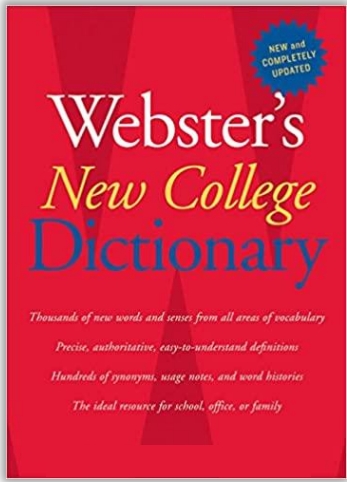
monitor at least one feature of the instrument in the field of view of the camera;

22. The non-transitory computer-readable medium of claim 13, wherein the shape is selectable to match a shape of the instrument.



“Adjustable” or “Adapted” Alignment Guide Is NOT Same As “Selectable” Alignment Guide

Webster’s New College Dictionary (Ex. 2041)



Adjust:

“To conform or adapt, as to new conditions”

Select:

“To pick out from among several;” “singled out in preference;” and “One that is chosen in preference to others or because of special value”

Adjustment Is Different From Selection



Christopher Pratt
Wells Fargo's Expert

**WELLS
FARGO**

Q. And is that what – is that what “adjustable” means here, that you’re stretching or shrinking the alignment guide to fit the document?

A. That would be how I read it.

Ex. 2019 at 79:8-11

An “Adjustable” Shape Is The Same As An “Adapted” Shape



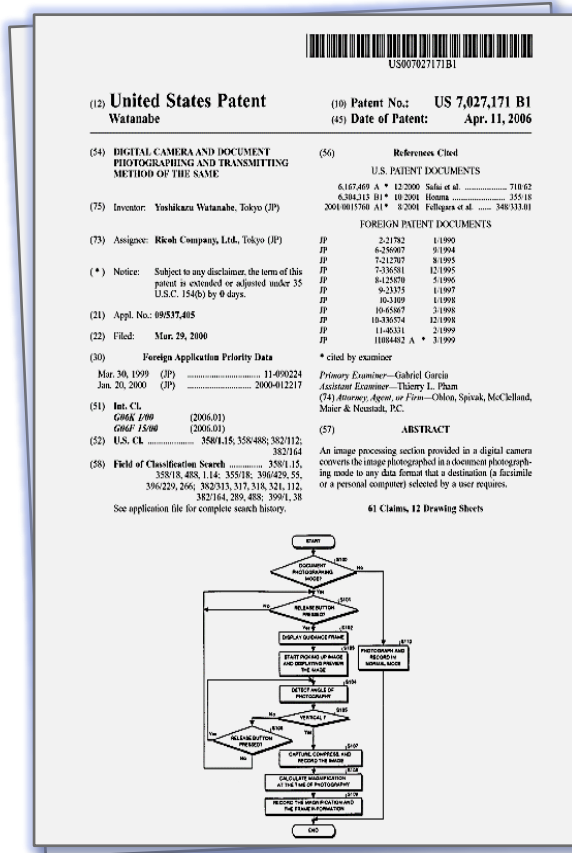
Christopher Pratt
Wells Fargo's Expert

**WELLS
FARGO**

Q. Is there a difference in your view, do those mean different things?

A. “Adapted” and “adjusted?” Not in this context. I see [them] as being very similar

No “Adjustable” Or “Adapted” Alignment Guide In Watanabe



photograph characters clearly. The operation section 109 further comprises a fixed document size setting key used to select between fixed document sizes (A size, letter, legal size, and so forth). The communication interface 110 com-

Ex. 1009 at 4:65-5:1

The user selects, when photographing is to be carried out in the document photographing mode, the document photographing mode with the photographing mode key of the operation section 109, and further selects the fixed document size (A size, letter, legal size, and so forth) of an image to be picked up with the regular document size setting key.

Ex. 1009 at 7:5-10

No “Adjustable” Or “Adapted” Alignment Guide In Watanabe



Christopher Pratt
Wells Fargo's Expert

**WELLS
FARGO**

Q. In the Watanabe reference he's teaching choosing an alignment guide size to display based on the user's selection of the document type or the destination, right?

A. Correct.

Q. And once the guide is displayed in Watanabe, the shape of that guidance frame doesn't change, right?

A. Correct.

Ex. 2019 at 91:17-25

No “Adjustable” Or “Adapted” Alignment Guide In Watanabe



Stephen Mott
USAA's Expert



Mott Declaration (Ex. 2001):

“Watanabe does not teach that the displayed fixed guidance frame has an adjustable shape or is adjustable *in any way*”

Ex. 2001 at ¶ 39

“Watanabe also makes clear that the selection of the fixed guidance frame size is performed *prior* to the image capture process”

Ex. 2001 at ¶ 40

Claim Terms Not In Dispute

- "Mobile Device"

- "Deposit"

“Petitioner submits that the claim constructions issued by the district court in this related litigation should be adopted for use in this IPR.”

IPR2020-00090 Pet. at 7; IPR2020-00091 Pet. at 7;
IPR2020-00092 Pet. at 6-7

District Court Claim Construction: Mobile Device



District Court Claim Construction Order:

Accordingly, the Court construes “mobile device” and “mobile computing device” as follows:

- “mobile device” means “computing device capable of being easily moved and that is controlled by a mobile operating system;” and
- “mobile computing device” means “computing device capable of being easily moved and that is controlled by a mobile operating system”

Why Is Mobile Device Construction Relevant

- “Mobile device” requires the use of a “mobile operating system”
Ex. 2010 at 22
- Yoon does not employ a mobile operating system Ex. 2019 at 86:7-9
- Wells Fargo’s previous expert admits a POSA has no ability to design software that runs on mobile operating system Ex. 2002 at 17:15-20, 19:11-17

Yoon Is Not A Mobile Device



Christopher Pratt
Wells Fargo's Expert

**WELLS
FARGO**

Q. Does Yoon describe its portable terminal being controlled by a mobile operating system?

A. No.

Ex. 2019 at 86:7-9

POSA Cannot Integrate Yoon



Peter Alexander
Wells Fargo's Expert

**WELLS
FARGO**

- Q. Does a person of ordinary skill in the art have experience with designing mobile applications for mobile devices?
- A. I didn't see that in the definition of a person of ordinary skill in the art.**

Ex. 2002 at 17:15-17, 19-20

POSA Cannot Integrate Yoon



Peter Alexander
Wells Fargo's Expert

**WELLS
FARGO**

Q. Do you *know what would be necessary to implement a Yoon-style system on a general-purpose* – on a mobile phone with a general-purpose operating system?

A. I haven't explored that.

Ex. 2002 at 92:17-20

POSA Cannot Integrate Yoon



William Saffici

Wells Fargo's Expert
in District Court

**WELLS
FARGO**

Q. You, yourself, at the time of the Patents-in-Suit, would not have the technical ability to combine Yoon or Gang and Nepomniachtchi and Ramachandran into a working system, correct?

A. Me, personally –

Q. Yes, sir.

A. --from a technical point of view?

Q. Yes, sir.

A. Oh. That's correct

Ex. 2022 at 116:11-19

Depositing Means Providing Suitable Image



District Court's Claim Construction Order:

“Depositing a check” is used in the Asserted Patents to describe the process of providing a check to a depository in a form suitable to allow funds to be deposited in an account.

Ex. 2010 at 15

PTAB Relied On Express Teaching In Specification

PTAB Ruling:

In addition, the '571 patent specification discloses that properly processing an image of a check entails obtaining check data without error from the image. Ex. 1001, 15:43–49 (“[T]he results of the monitoring may indicate that the camera and/or the check should be repositioned . . . 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 the check can be cleared.” (emphasis added)). The specification further

Wells Fargo Bank, N.A. v. United Services Automobile Ass’n,
CBM2019-00004, Paper 22 at 16 (P.T.A.B. May 15, 2019).



PTAB Relied On Express Teaching In Specification

PTAB Ruling:

The '571 patent specification repeatedly discloses that “passes the monitoring criteria” means determining that the check can be properly processed and cleared. For example, the '571 patent 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); *id.* at 7:52–57 (“In an

Wells Fargo Bank, N.A. v. United Services Automobile Ass’n,
CBM2019-00004, Paper 22 at 15 (P.T.A.B. May 15, 2019).



Yoon Does Not Disclose Image Of Sufficient Quality For Deposit



William Saffici

Wells Fargo's Expert

**WELLS
FARGO**

Q. For both Yoon and Gang, there's no analysis done as to whether the image of the business card that's going to be captured is of sufficient quality that you're going to be able to extract the information that's present on that business card, fair?

A. Fair, as we speak of them individually.

Q. Correct.

A. Okay.

Ex. 2004 at 114:1-8

Yoon Does Not Monitor Image To Determine Sufficient Quality For Deposit



Peter Alexander

Wells Fargo's Expert

**WELLS
FARGO**

Q. Do you know whether alignment is sufficient to create an image of sufficient quality that it can be deposited? ...

A. I think sufficient quality for a check to be deposited depends on a lot of things, not just alignment.

...

Q. Sure. Do you believe that merely because an image is sufficiently bright, that it will ensure that the image can be successfully deposited?

A. Well, I think it's clear from Nepomniachtchi and even Yoon that there are many factors: Focus, brightness, smudgy images, torn checks, torn, folded checks, misaligned checks, smudges over the check, bad handwriting. There are many factors.

Ex. 2002 at 119:7-13, 119:25-120:7

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Objective Indicia Of Non-Obviousness

Nepomniachtchi: Manual Capture Using Auto-Focus and Auto-Flash

Nepomniachtchi:

- Employ cameras with auto-focus and auto-flash

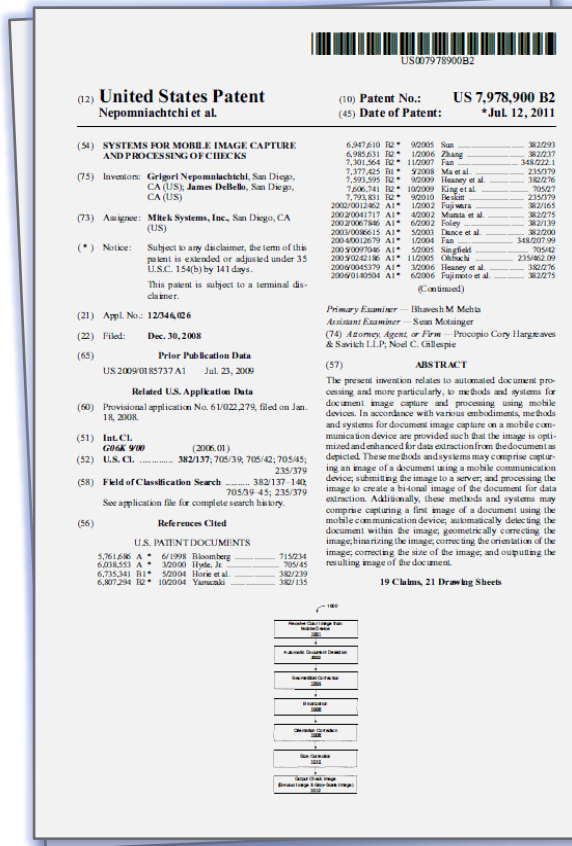
image using a greater number of mega pixels. Other mobile cameras phones might have an **auto-focus feature, automatic flash**, etc. Generally, these features may improve an image when compared to mobile devices that do not include such features.

Ex. 1006, 7:35-39

- Manual capture

“Nepomniachtchi does **not** disclose that the [image capture] process occurs ‘automatically’”

IPR2020-00090 Pet. at 29; IPR2020-00091 Pet. at 27



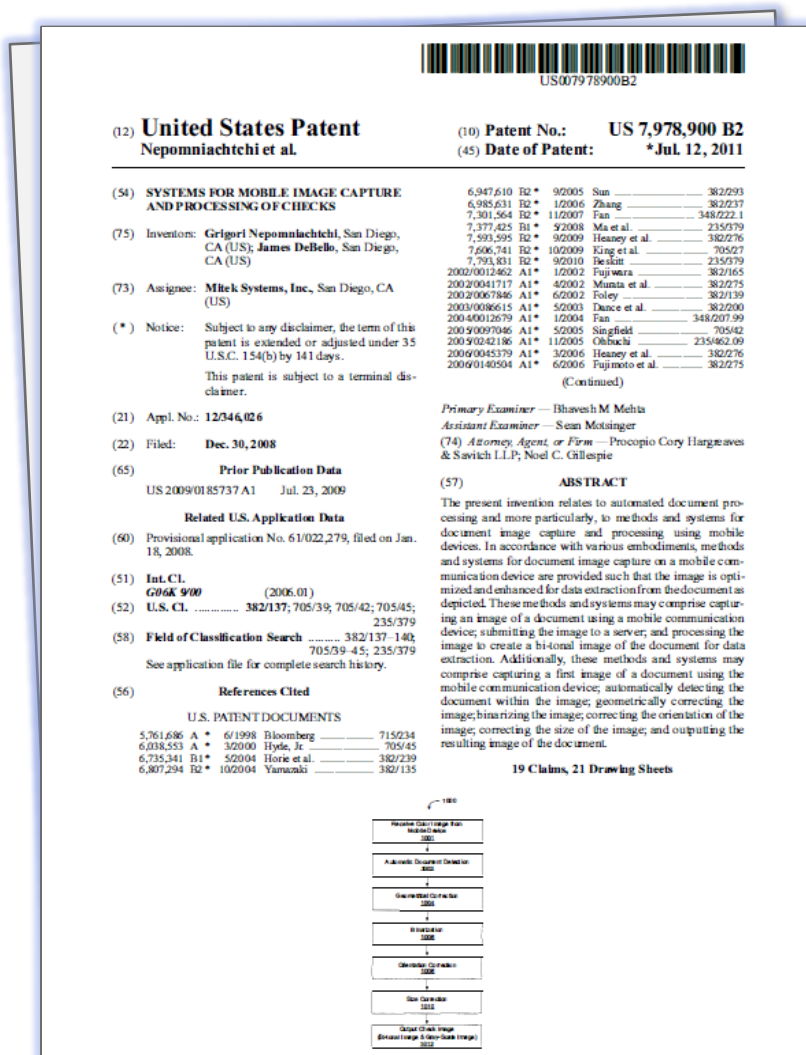
Nepomniachtchi: Post-Capture, Pre-Correction, Quality Analysis

Nepomniachtchi:

document. Accordingly, in some embodiments, systems and methods using a mobile device to create images of documents may include the ability to identify poor quality images. If the quality of an image is determined to be poor, a user may be prompted to take another image.

- Detecting/scoring out of focus image. 7:49-8:23
- “automatic document detection” 11:4-16
- “locates the corners.” 12:24-32

**NONE RELATED TO ORIENTATION OR
LIGHTNESS/DARKNESS**



“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 . . . 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 . . . Thus, Petitioner fails to recognize that Nepomniachtchi already teaches a solution to address the problem of requesting retakes at the server, by performing the image quality analysis on the mobile device.”

Wells Fargo Bank, N.A. v. United Services Automobile Ass’n,
IPR2019-01081, Paper 39 at 31-32 (P.T.A.B. Jan. 11, 2021)

Processing Demands Off-Loaded To Server Without Issue

Nepomniachtchi:

task. It will be understood, however, that in some embodiments, a **server based implementation** might be employed to off-load processing demands from the mobile device. 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.

Ex. 1006 at 10:43-48

No Teaching Of Any Need Or Desire To Reduce Processing Burden On Server

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ex. 2042, p. 42

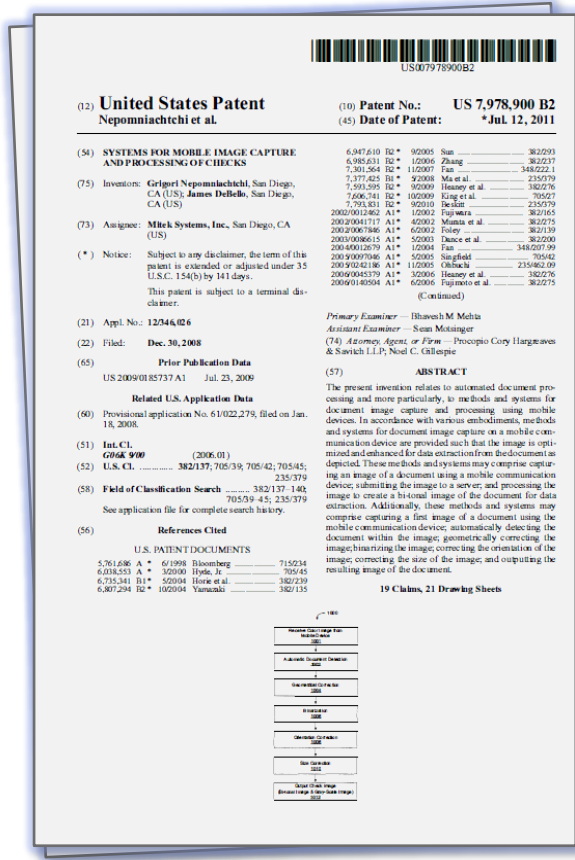
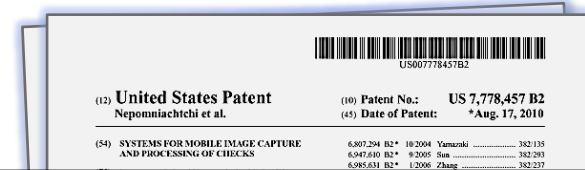
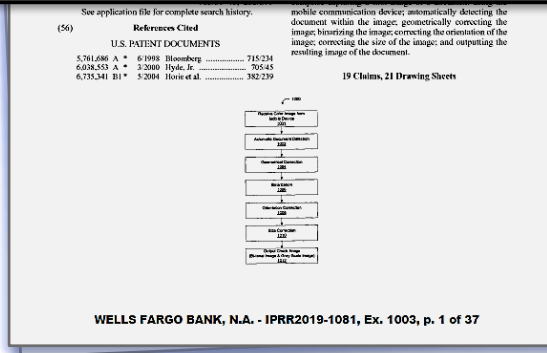


Image Correction Is Performed On Server

Nepomniachtchi:



In operation 710, image processing is performed. In the example embodiment, the server may clean up the image by performing auto-rotate, de-skew, perspective distortion correction, cropping, etc. The server might also process the image to produce a bi-tonal image for data extraction.



- “automatic document detection” 11:5-16
- Detecting/correcting “perspective distortion” 10:5-9
- “Image sharpening”. 8:52-53
- “geometrical corrections” 11:17-27
- Includes “orientation correction” 17:28-31
- “auto-rotate operations” 11:19-27
- “deskew operations” 11:19-22
- “perspective distortion correction operations” 11:19-22
- “cropping operations” 11:19-22
- “size correction operation.” 11:35-43
- “color reduction” 12:15-23
- conversion of a color image to a smaller “icon” image. 12:7-14
- “small ‘dark ‘ objects within the image are eliminated.” 12:57-17
- “high local contrast” suppressing 13:18-29

Board Agrees Nepomniachtchi Image Correction Performed On Server

UNITED STATES
PATENT AND TRADEMARK OFFICE



IPR2019-01083 FWD:

“[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.”

Wells Fargo Bank, N.A. v. United Services Automobile Ass’n,
IPR2019-01083, Paper 39 at 33(P.T.A.B. Nov. 24, 2020)

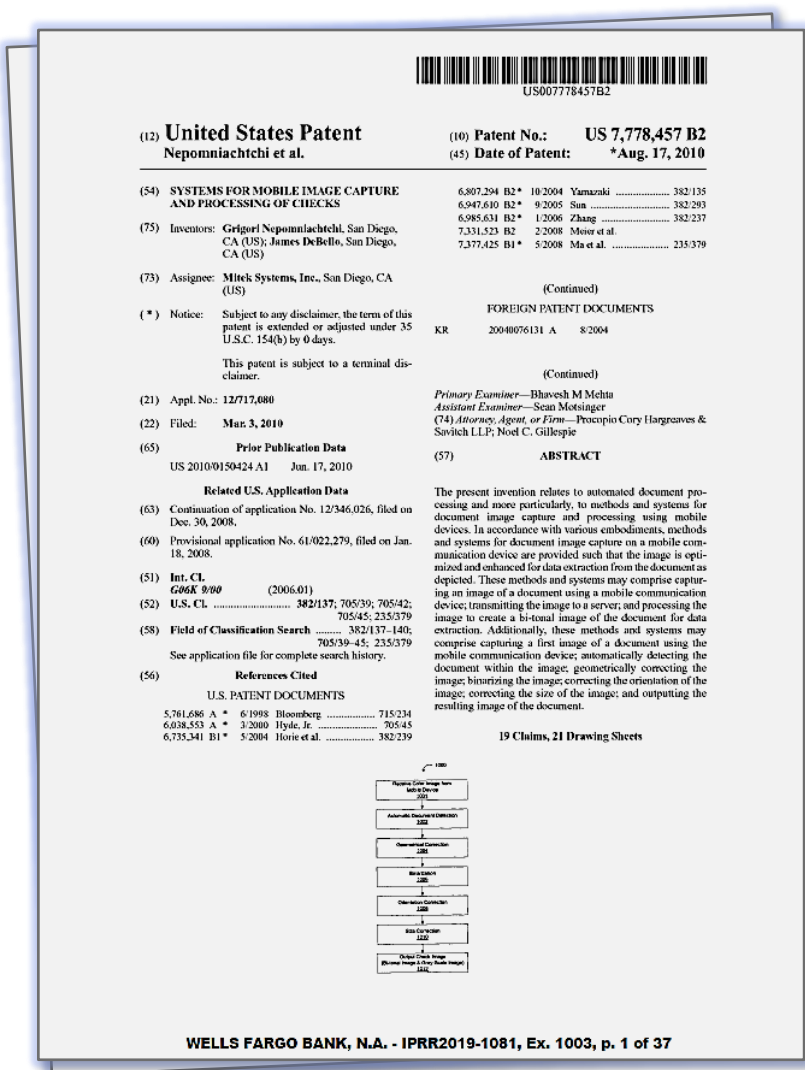
Nepomniachtchi: Post-Capture User Communication Is Beneficial

Nepomniachtchi:

In operation 712, the processing of the document using a mobile device is completed. For example, when the server has confirmed that all necessary data can be extracted from a received image, it might transmit a status message to the mobile device that transmitted the image. Alternatively, if some necessary data cannot be extracted, the server may transmit a request for additional data. This request might include a request for an additional image. In some cases, the request may be for data entered by a user, for example, an amount, e.g., of a check, that might be entered using a key pad on the mobile communication device.

Ex. 1006 at 10:18-28

- Success message
- Request to retake image
- Request for additional information



Why Did The Prior Art Use Human Judgment For Checks?



Peter Alexander

Wells Fargo's Expert
in IPR2019-01082 &
IPR2019-01083

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Q. What is required for it to be an accurate representation?

A. That it be of the ***same visual quality as the hard copy check.***

Q. What does that mean, to be of the same visual quality?

A. Well, I know that in the banking industry, people -- a ***human quite often looks at a check that's been deposited and decides if it's consistent*** in terms of the -- for example, the courtesy value and the legal amount, and that sometimes they make corrections to -- or they reject the check based on not being able to read amounts. So ***mostly it derives from visual inspection.***"

Ex. 2002 at 45:19-46:6

IPR2020-00090 PO Sur-Reply at 11-12;
IPR2020-00091 PO Sur-Reply at 11-12
IPR2020-00092 PO Sur-Reply at 10-11

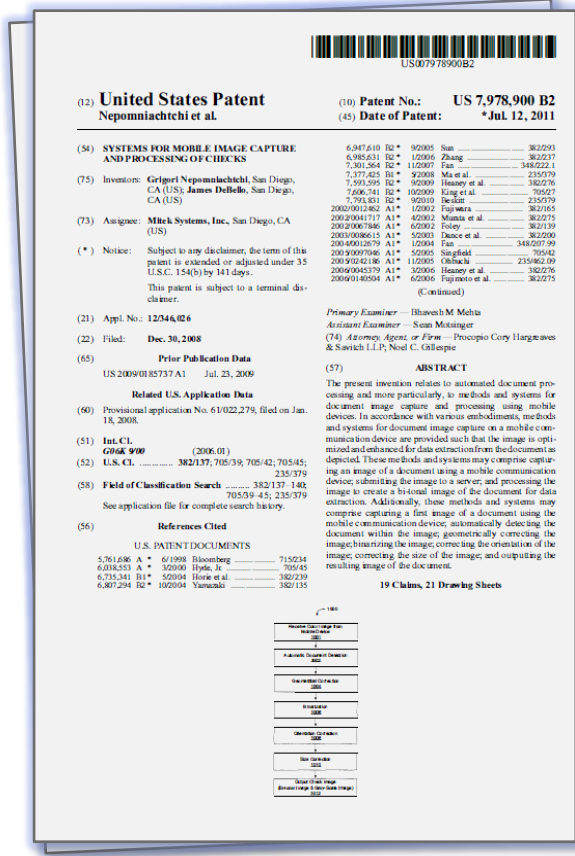
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Many Factors Influence Successful Check Image Extraction

Nepomniachtchi:

Many different factors may affect the quality of an image and the ability of a mobile device based image capture and processing system. Optical defects, such as out-of-focus

- “optical defects”
- “unequal contrast or brightness”
- “the document position on a surface when photographed or the angle at which the document was photographed”
- “upside down”
- “the location of a light source and light source distortions”
- “the type of document, the fonts used, the colors selected”
- The number of “mega pixels”
- “the type of surface”



No Motivation To Add Yoon Pre-Quality Analysis

POSA Would Avoid Yoon Pre-Capture Monitoring

- **Increased mobile CPU burden**
 - Pre-capture analysis has significant CPU mobile burden (Ex. 2001 at ¶ 30)
 - Post-capture just as efficient (Ex. 2002 at 90:20-91:6)
 - Post-capture analysis still must occur (IPR2020-00090 Reply at 11, 19; IPR2020-00090 Reply at 11, 19; IPR2020-00092 Reply at 11)
 - Post-capture correction performed on server (no burden) (Ex. 1006 at 10:5-9, 41-48; Ex. 2016 ¶ 29; Ex. 2019 at 100:16-21)
- **Skew and brightness**
 - Not sufficient for machine readable check image (Ex. 2001 ¶¶ 27, 32; Ex. 2002 at 119:7-120:7; Ex. 2019 at 106:6-9, 20-24)
- **Negative impact on user experience** (Ex. 2016 ¶¶ 13, 15; Ex. 2019 at 40:13-15)
 - Slow performance causes user frustration (Ex. 2016 at ¶¶ 25-31)
 - User frustration harms technology adoption rates (Ex. 2016 at ¶¶ 11-15; Ex. 2023 at 13)

POSA Concerned About Computational Burden On Mobile Device



Christopher Pratt
Wells Fargo's Expert

**WELLS
FARGO**

Pratt Declaration:

“A POSITA would understand that *excessive computation* performed on a mobile device *necessarily* leads to slower than desirable response times and potential user dissatisfaction”

Ex. 1003 at ¶ 91

POSA Concerned About Mobile Device CPU Burden



Peter Alexander
Wells Fargo's Expert

**WELLS
FARGO**

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

A. I'm sure ***they were concerned*** with it.

Ex. 2002 at 67:25-68:3

Pre-Capture Analysis *Increases* Computational Burden On Mobile Device



Stephen Mott
USAA's Expert



Mott Declaration:

30. First, incorporating Yoon's automatic captures techniques into Nepomniachtchi would add CPU overhead to the system. In 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. Check image quality analysis is computationally intensive and I am not aware of any system, prior to USAA's, that performed this analysis in real-time, prior to image capture.

Ex. 2001 at ¶ 30

Yoon Performs Pre-Capture Analysis At The Mobile Device

Yoon:

[0019] FIG. 1 is a block diagram of a portable terminal according to the present invention. Referring to FIG. 1, the portable terminal includes a controller 100, a camera unit 102, an image processor 104, and a display unit 106. The

[0021] The 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. Also, the

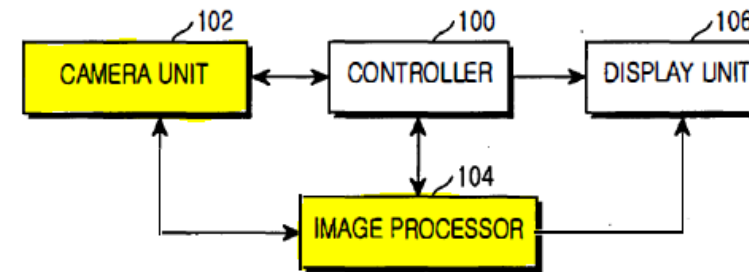
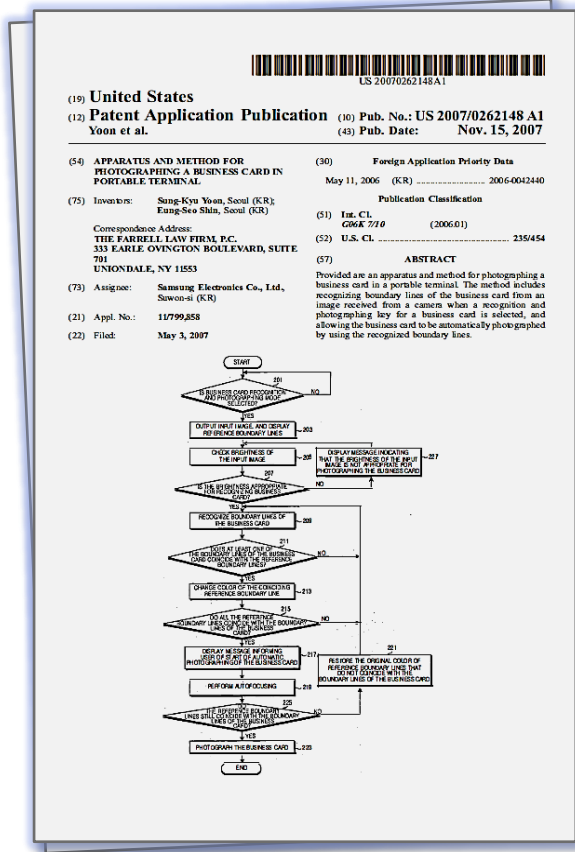


FIG.1

Ex. 1008, Paragraph 0019, 21, Fig. 1



Yoon Confirms It Requires Frame by Frame Analysis

Yoon:

[0021] The image processor 104 processes the digital data received from the camera unit 102 in units of frames, and

Ex. 1008 at ¶ 0021

(19) **United States**
(12) **Patent Application Publication** (30) Pub. No.: US 2007/0262148 A1
Yoon et al. (43) Pub. Date: Nov. 15, 2007

(54) APPARATUS AND METHOD FOR
PHOTOGRAPHING A BUSINESS CARD IN
PORTABLE TERMINAL

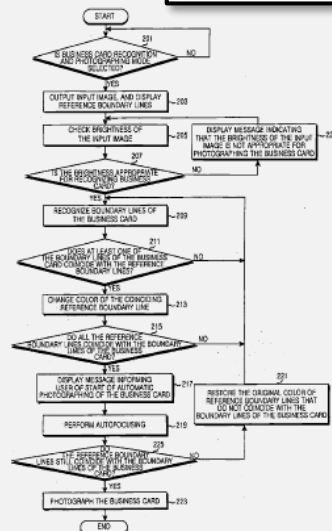
(75) Inventors: Sung-Kyu Yoon, Seoul (KR);
Eung-Seo Shin, Seoul (KR)

Correspondence Address:
THE FARRELL LAW FIRM, P.C.
333 EARLE OVERTON BOULEVARD, SUITE
701
UNIONDALE, NY 11553

(73) Assignee: Samsung Electronics Co., Ltd.,
Suwon-si (KR)

(21) Appl. No.: 11/799,858

(22) Filed: May 3, 2007



WELLS FARGO BANK, N.A. - IPRR2019-1081, Ex. 1005, p. 1 of 8

Yoon Performs Pre-Capture Analysis In Real-Time, Locally



Stephen Mott
USAA's Expert



Mott Declaration:

30. First, incorporating Yoon's automatic captures techniques into Nepomniachtchi would add CPU overhead to the system. In 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. Check image quality analysis is computationally intensive and I am not aware of any system, prior to USAA's, that performed this analysis in real-time, prior to image capture.

Ex. 2001 at ¶ 30

IPR2020-00090 POR at 41 & PO Sur-Reply at 8;
IPR2020-00091 POR at 26 & PO Sur-Reply at 8;
IPR2020-00092 POR at 32 & PO Sur-Reply at 7

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ex. 2042, p. 55

Wells Fargo: Yoon Is No More Efficient



William Saffici

Wells Fargo's Expert

**WELLS
FARGO**

Q. Do you have any ***factual basis*** to conclude that the ***skew correction deployed by Nepomniachtchi on the server side is any less efficient than skew correction using alignment guides?***

A. I ***don't have any factual --***

Q. Okay.

A. -- ***proof*** of that

Ex. 2004 at 102:2-8

IPR2020-00090 POR at 37-38 PO Sur-Reply at 5; IPR2020-00091 POR at 22-23 &
PO Sur-Reply at 5; IPR2020-00092 POR at 29 & PO Sur-Reply at 4-5

Yoon Pre-Capture Analysis Adds Nothing New To Nepomniachtchi



Peter Alexander
Wells Fargo's Expert
in IPR2019-01082 &
IPR2019-01083

**WELLS
FARGO**

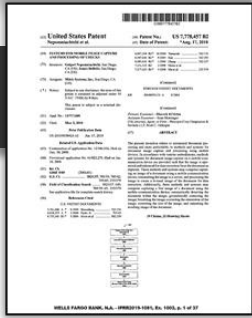
Q. Is there ***anything*** that Nepomniachtchi doesn't do that Yoon does?

A. **No.** I think they both do the same three alignment corrections that I was describing; the rotation, the skew, and perspective distortion.

Ex. 2002 at 99:23-100:3

IPR2020-00090 POR at 40; IPR2020-00091
POR at 25; IPR2020-00092 POR at 31

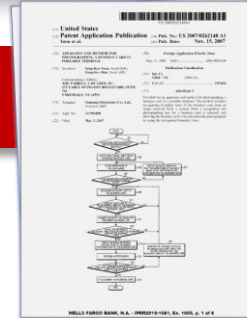
Nepo Not Concerned With Yoon Criteria For Quality Analysis, Only Correction



Nepomniachtchi

Image Quality Analysis

- Detecting/scoring out of focus image. 7:49-8:22
- “automatic document detection” 11:4-16
- “locates the corners.” 12:24-32



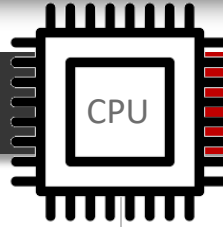
Yoon

Image Quality Analysis

- Alignment
- Brightness

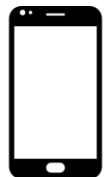
Computational Burden Increase At Mobile Device From Adding Yoon

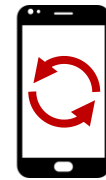
Nepomniachtchi



Nepomniachtchi + Yoon

 No Pre-Capture analysis

 Analyze image quality
Post-Capture



Analyze image quality
Pre-Capture **until image
passes monitoring criterion**



Analyze image quality
Post-Capture

Board Found *Increased* Computational Burden By Adding Yoon

UNITED STATES
PATENT AND TRADEMARK OFFICE



IPR2019-01082 & IPR2019-01083 FWD:

“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 computational burden on the mobile device*** and may lead to slower response times and user dissatisfaction.”

Wells Fargo Bank, N.A. v. United Services Automobile Ass’n, IPR2019-01082, Paper 41 at 48 (P.T.A.B. Nov. 24, 2020); *Wells Fargo Bank, N.A. v. United Services Automobile Ass’n*, IPR2019-01083, Paper 39 at 51-52 (P.T.A.B. Nov. 24, 2020)

Board Found *Increased* Computational Burden By Adding Yoon

UNITED STATES
PATENT AND TRADEMARK OFFICE



IPR2019-01083 FWD:

“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*.”

“[W]e agree with Mr. Mott’s testimony that ***such a modification would increase computational burden on the mobile device***.”

Wells Fargo Bank, N.A. v. United Services Automobile Ass’n, IPR2019-01083,
Paper 39 at 39, 44 (P.T.A.B. Nov. 24, 2020)

Check Image Quality Is Complex Problem



William Saffici
Wells Fargo's Expert

WELLS
FARGO

Q. My only point is is [sic] that, in ***order to determine that you're going to be able to successfully deposit an image of a check, multiple factors can influence*** that, correct? ***They're not standardized***, but multiple factors can influence it?

A. I would agree that factors could influence it.

Ex. 2004 at 88:22-89:2

Yoon Alignment & Brightness Not Enough For Depositable Image



Stephen Mott
USAA's Expert



Mott Declaration:

27. Examining alignment and brightness alone is not sufficient to determine whether a check image will be suitable for deposit processing. It was well known in the art, in 2009, that many image quality factors were important in evaluating whether a check image would be suitable for processing and successful deposit. This is reflected in Nepomniachtchi's teachings. For example, Nepomniachtchi lists a number of factors that may impact the ability of a check processing system to read critical deposit information from the received check image[.]

Ex. 2001 at ¶ 27

Yoon Alignment & Brightness Not Enough For Depositable Image



Peter Alexander

Wells Fargo's Expert
in IPR2019-01082 &
IPR2019-01083

**WELLS
FARGO**

Q. Do you know whether **alignment** is sufficient to create an image of sufficient quality that it can be deposited?

A. I think sufficient quality for a check to be deposited ***depends on a lot of things, not just alignment.***

Q. Do you believe that merely because an image is sufficiently bright, that it will ensure that the image can be successfully deposited?

A. Well, I think it's clear from Nepomniachtchi and even Yoon that ***there are many factors***: Focus, brightness, smudgy images, torn checks, torn, folded checks, misaligned checks, smudges over the check, bad handwriting. ***There are many factors.***

Yoon Alignment & Brightness Not Enough For Depositable Image



Christopher Pratt
Wells Fargo's Expert

**WELLS
FARGO**

Q. It has – there are certain image quality requirements for a check image to be, you know, adequate for deposit, correct?

A. Right

Q. But you generally understand that the standards group ANSI has put out standards related to electronic check deposit?

A. I'd imagine they have. ***I don't know them, but yeah.***

Yoon Does Not Disclose Image Of Sufficient Quality For Deposit



William Saffici

Wells Fargo's Expert

**WELLS
FARGO**

Q. For both Yoon and Gang, there's no analysis done as to whether the image of the business card that's going to be captured is of sufficient quality that you're going to be able to extract the information that's present on that business card, fair?

A. Fair, as we speak of them individually.

Q. Correct.

A. Okay.

Ex. 2004 at 114:1-8

Yoon Does Not Monitor Image To Determine Sufficient Quality For Deposit



William Saffici

Wells Fargo's Expert

**WELLS
FARGO**

Q. And merely because a check is properly aligned in a field of view doesn't mean it's going to have sufficient image quality to be able to be successfully deposited, correct?

A. That's correct. There are other characteristics.

Q. Merely because it has a certain level of lightness or darkness doesn't mean it's going to be of sufficient quality that it's going to be able to be successfully deposited, fair?

A. That's correct.

Ex. 2004 at 89:3-13

Precise Orientation Must Always Be Checked Because of MICR



William Saffici

Wells Fargo's Expert
in District Court

**WELLS
FARGO**

Q. *Business cards don't have MICR information, fair?*

A. **That's correct**

Q. In the image of the check ***the MICR information must be at a very specified location on the check***, according to the ANSI guidelines, fair?

A. Correct.

Ex. 2003 at 82:5-8

Precise Orientation Must Be Checked Because of MICR

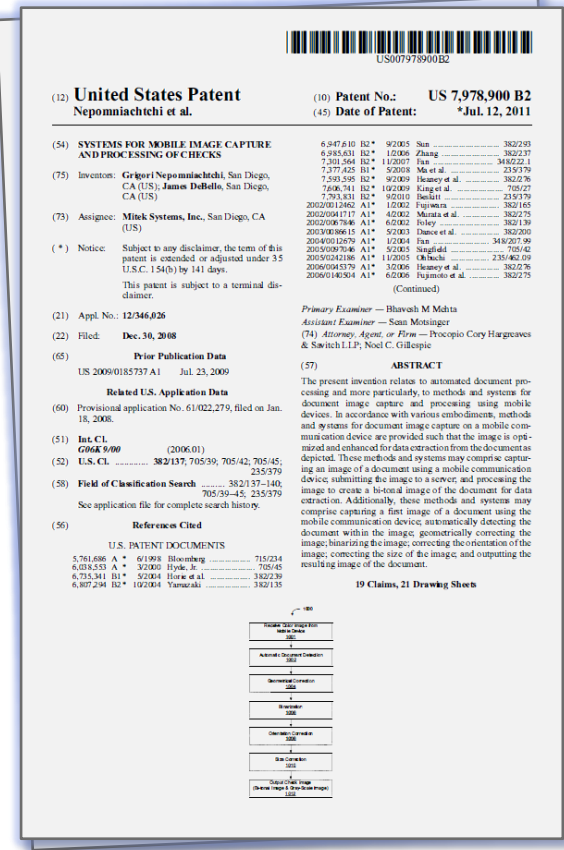
Nepomniachtchi:

document. For example, in order to process a check that is to be deposited, it might be necessary to electronically read the legal 102 and courtesy 104 amounts, the MICR line 106, the payee 108, date 110 and the signature 112 on the check. In some cases, this information is difficult to read because, for example, the check or other document is out of focus or is otherwise poorly imaged.

Ex. 1006 at 6:39-42

Upon receiving the bi-tonal image of the check at operation 1702, method 1700 reads the MICR-line at the bottom of the bi-tonal check image at operation 1704 and generates an MICR-confidence value. This MICR-confidence value

Ex. 1006 at 18:62-65



Precise Orientation Must Always Be Checked Because of MICR



William Saffici

Wells Fargo's Expert
in District Court

**WELLS
FARGO**

Q. In the image of the check ***the MICR information must be at a very specified location on the check,*** according to the ANSI guidelines, fair?

A. Correct.

Yoon Alignment Cannot Solve Upside Down Images



Christopher Pratt
Wells Fargo's Expert
(INSERT IMAGE)

**WELLS
FARGO**

Q. If an upside down document were aligned within the alignment guide of Yoon and properly lit and the focus, the Yoon system would automatically capture the image of that document, fair?

A. It would capture it, correct. Yes.

Ex. 2019 at 87:15-19

Yoon Alignment Does Not Address Check Design

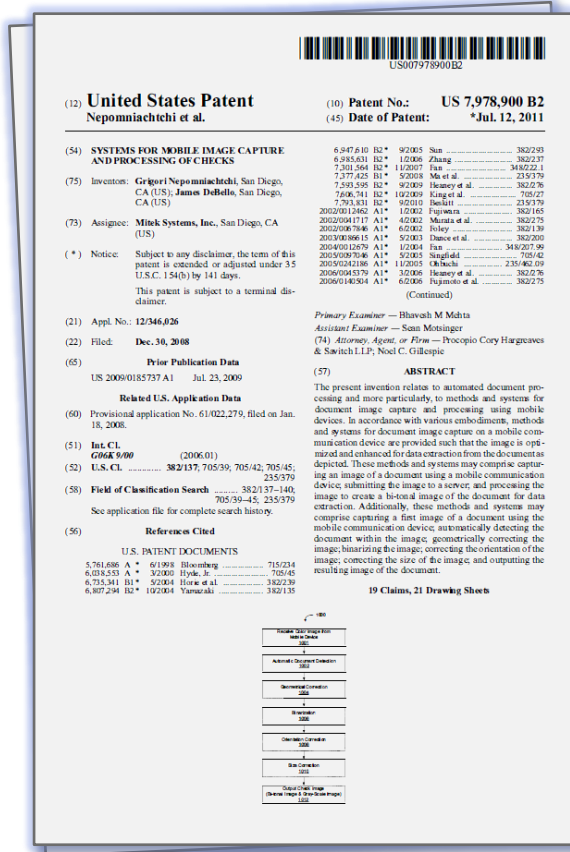
Nepomniachtchi:

In addition, where the document is a check, during the geometric correction operation of some embodiments of the invention, the geometrically corrected predefined image size is at 1200×560 pixels (See, for e.g., FIG. 15 description), which is roughly equivalent to the size of a personal check scanned at 200 DPI. However, the size of business checks tend to vary significantly, with most business checks having a width greater than 1200 pixels when scanned at 200 DPI. Some business checks are known to be as wide as 8.75", which translates to be 1750 pixels in width when scanned at 200DPI. Hence, in order to restore the size of business checks that have been geometrically corrected in accordance with the invention at a predefined image size of 1200×560 pixels, the size correction operation is performed.

Ex. 1006 at 19:38-51

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ex. 2042, p. 72



Yoon Method Of Alignment Does Not Address Check Design



Stephen Mott
USAA's Expert



Mott Declaration:

30. A person of skill in the art would also expect the proposed combination to result in a failed capture situation where the user attempts to deposit a business check with an unusual size and shape that does not correspondence [sic] to the shape of an alignment guide. In the proposed combination, it may simply be impossible for the user to align the business check with the alignment guide in order to trigger automatic capture, even though the back-end system of Nepomniachtchi would be able to handle the image as-is by applying the size correction operation.

Ex. 2016 at ¶ 30

USAA Solved By Employing Alignment Guides That Adjust On The Fly

In an implementation, an alignment guide may be provided that is adjustable at the mobile device 106. The adjustment may be made by the user 102, the mobile device 106 and/or the camera 207 (e.g., an application running on the mobile device 106 and/or the camera 207), and/or the financial institution 130. FIG. 4 is a diagram of an example image 260

E.g., IPR2020-00090 Ex. 1001 ('197 Patent) at 6:48-53; FIG. 9

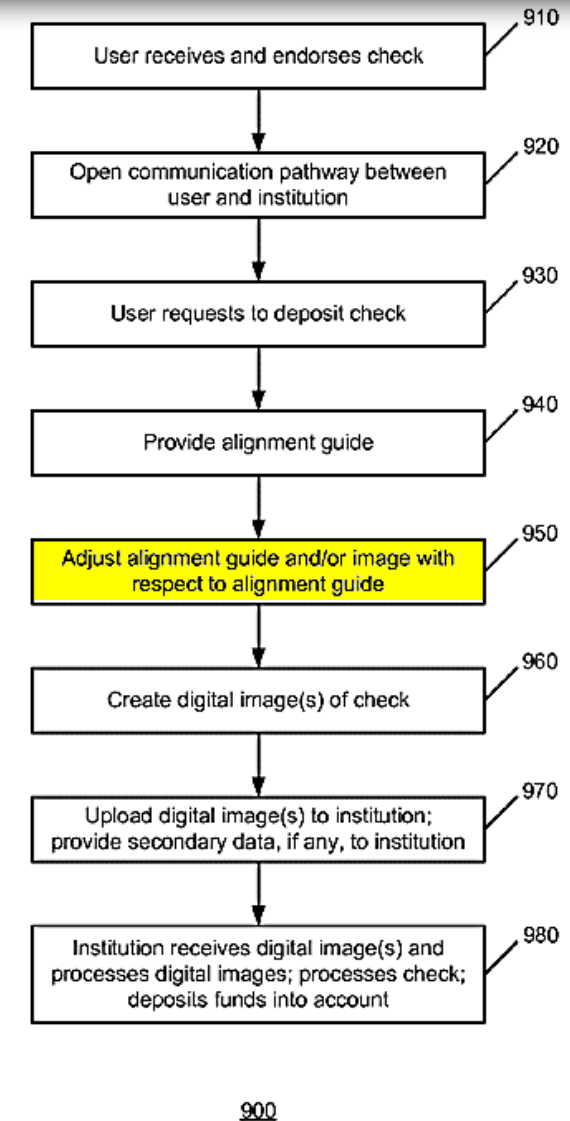
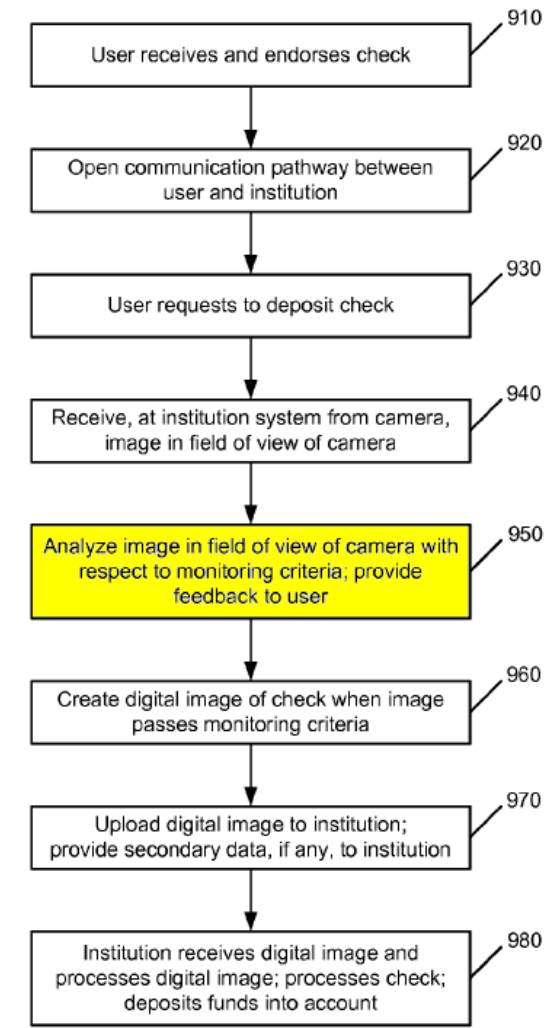


FIG. 9

USAA Solved By Employing Alignment Guides That Adjust On The Fly

The alignment guide 263 may be adjustable by the user 102 via one or more adjustment buttons, selectors, arrows, or other indicators (shown in FIG. 4 as an adjustment button 280 of the camera 207). For example the user 102 may use the adjustment button 280 to change the shape, aspect ratio, and/or the location of the alignment guide 263 in the field of view of the camera 207. In an implementation, the user may select the alignment guide 263 using any known selection techniques (e.g., moving a cursor to the alignment guide 263, highlighting or clicking on the alignment guide 263, selecting the alignment guide 263 from a pull down menu of the camera 207 or the mobile device 106) and may use the adjustment button 280 to modify the alignment guide 263. In an implementation, the user 102 may select which alignment guide from a plurality of alignment guides is to be displayed on the field of view. The camera 207 or the mobile device may store a plurality of alignment guides, and the user 102 may use any known selection technique(s) to select an alignment guide that is to be displayed on the field of view of the camera 207.

E.g., IPR2020-00090 Ex. 1001 ('197 Patent) at 6:60-7:11; FIG. 9



900

FIG. 9

No Motivation To Add Auto-Capture Even if Motivation To Add Yoon Pre-Quality Analysis

Even If Pre-Capture Monitoring Used, POSA Would Avoid Yoon Auto-Capture

- **Yoon auto-capture precludes human judgment**
 - Human judgment believed to ensure high quality check image (Ex. 2002 at 45:19-46:6, 120:22- 121:3)
 - Yoon criteria not sufficient to ensure deposit success (Ex. 2001 at ¶ 27; Ex. 2002 at 119:7-13, 119:25-120:7)
 - Yoon pre-quality image capture analysis does not require auto-capture (Ex. 2001 at ¶ 30)
- **Yoon auto-capture increases mobile CPU burden**
 - Yoon requires real-time analysis of images. (Ex. 2001 at ¶ 30; Ex. 1008 at [0019]-[0021])
- **Yoon auto-capture increases check image error** (Ex. 2001 at ¶ 27; Ex. 2016 at ¶ 25-31)

Why Did The Prior Art Use Human Judgment For Checks?



Peter Alexander

Wells Fargo's Expert
in IPR2019-01082 &
IPR2019-01083

**WELLS
FARGO**

Q. What is required for it to be an accurate representation?

A. That it be of the ***same visual quality as the hard copy check.***

Q. What does that mean, to be of the same visual quality?

A. Well, I know that in the banking industry, people -- a ***human quite often looks at a check that's been deposited and decides if it's consistent*** in terms of the -- for example, the courtesy value and the legal amount, and that sometimes they make corrections to -- or they reject the check based on not being able to read amounts. So ***mostly it derives from visual inspection.***"

Ex. 2002 at 45:19-46:6

IPR2020-00090 PO Sur-Reply at 11-12; IPR2020-00091 PO Sur-Reply at 11-12;
IPR2020-00092 PO Sur-Reply at 10-11

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ex. 2042, p. 78

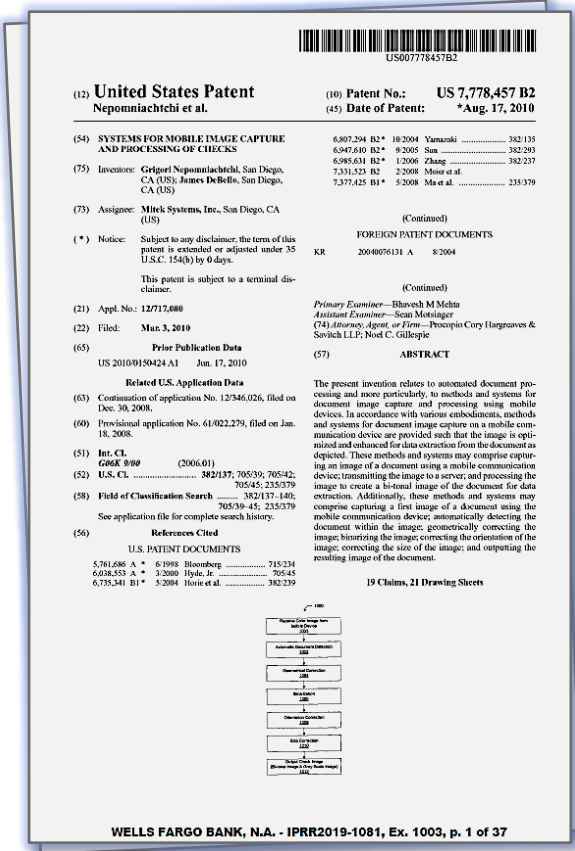
Nepomniachtchi: Post-Capture User Communication Is Beneficial

Nepomniachtchi:

In operation 712, the processing of the document using a mobile device is completed. For example, when the server has confirmed that all necessary data can be extracted from a received image, it might transmit a status message to the mobile device that transmitted the image. Alternatively, if some necessary data cannot be extracted, the server may transmit a request for additional data. This request might include a request for an additional image. In some cases, the request may be for data entered by a user, for example, an amount, e.g., of a check, that might be entered using a key pad on the mobile communication device.

Ex. 1006 at 10:18-28

- Success message
- Request to retake image
- Request for additional information



Removal Of Human Judgment Proliferates Errors



Stephen Mott
USAA's Expert



Mott Declaration:

26. For example, Yoon only claims techniques for monitoring image alignment and brightness. It does not have the ability to monitor images to ensure they are correctly oriented. Yoon's ability to automatically capture the check image when the check is aligned with an alignment guide would do nothing to address an upside down image; to the contrary, the nature of auto-capture means that the combined system would automatically capture the image as soon as the "alignment and brightness monitoring criteria are satisfied," whether or not the image was suitable in other respects . . . The system would fail to process this check, without providing the human user with an opportunity to assess the image's suitability for deposit.

Ex. 2016 at ¶ 26

Removal Of Human Judgment Proliferates Errors



Stephen Mott
USAA's Expert



see that the check should be flipped over before capturing). Indeed, a POSITA would understand that an extraordinarily large number of factors can influence check image quality; including, for example, skewing, warping, brightness, contrast, sharpness, damaged or torn corners, obstructions, e.g., blocking of the MICR line, legibility of handwriting, color/texture of the background, image resolution, image color, and type of check, among other factors. This would likely result in more instances where Nepomniachtchi's system must prompt the user to retake the check image, which creates a negative experience.

Ex 2001 at ¶ 31

Board Agreed No Motivation To Remove Human Judgment

UNITED STATES
PATENT AND TRADEMARK OFFICE



IPR2019-01082 and IPR2019-01083 FWD:

“We are not persuaded by Petitioner’s argument that the prior art shows that replacing the user’s judgment ‘was a good thing.’”

“[W]e 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.”

Wells Fargo Bank, N.A. v. United Services Automobile Ass’n, IPR2019-01082, Paper 41 at 60, 62 (P.T.A.B. Nov. 24, 2020); *Wells Fargo Bank, N.A. v. United Services Automobile Ass’n*, IPR2019-01083, Paper 39 at 65, 67 (P.T.A.B. Nov. 24, 2020)

Yoon Pre-Capture Analysis Separable From Auto-Capture



Stephen Mott
USAA's Expert



Mott Declaration:

31. [A] POSITA could modify Nepomniachtchi to prohibit image capture (for example by disabling or not displaying the shutter button) until the alignment and brightness are adequate, ensuring that an images captured by the user have satisfied these criteria. These approaches would be preferable to a POSITA as they would not require redesigning Nepomniachtchi's image capture method from manual to automatic, would be simpler to implement and would achieve the same benefits.”

Ex. 2001 at ¶ 30

Yoon Auto-Capture Would Cause Retake Errors



Stephen Mott
USAA's Expert



Mott Declaration:

27. Another challenge presented by the proposed combination is the possibility of “retake errors.” In the existing Nepomniachtchi system, if the user is prompted to retake a check image, he/she can learn from the mistake and take a better check image the second time . . . If a flaw in the combined system results in the automatic capture of images that are not suitable for deposit, then “retaking” the image will not change the result, since the decision to capture the check image has been taken out of the user’s hands.”

Ex. 2016 at ¶ 26

Yoon Auto-Capture Would Cause Retake Errors



Christopher Pratt
Wells Fargo's Expert

**WELLS
FARGO**

Q. It's possible even in an automatic capture system, that the captured image will not be adequate, right?

A. It's possible, yes.

Q. And in that case the user would have to try again, try to get a better result, right?

A. Yes.

Q. If there's a flaw in the automatic capture algorithm, then that error is just going to repeat itself the next time the user attempts to take a picture, right?

A. You would hope you'd have caught the error prior to releasing to the public, but yes.

...

Q. Right. But because the nature of the automatic capture and that it's the system making the decision to capture the check image, ***you know, any error in that process is going to be very difficult for the user to resolve***, right?

A. Yes.

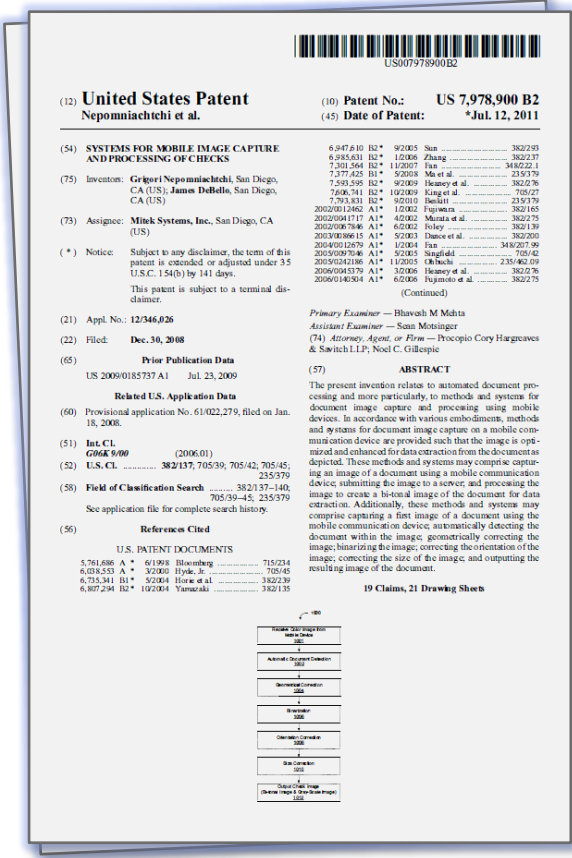
Ex. 2019 at 93:13-94:12

Pratt Declaration Never Asserts Hand Shaking Is A Motivation To Modify Nepomniachtchi

Nepomniachtchi Addresses Hand Shaking

Nepomniachtchi can already correct any issues caused by shakiness post-capture:

- Detecting/correcting “perspective distortion” 10:5-9
- “Image sharpening”. 8:52-53
- “geometrical corrections” 11:17-27
- “orientation correction” 17:28-31
- “auto-rotate operations” 11:19-27
- “deskew operations” 11:19-22
- “perspective distortion correction operations” 11:19-22

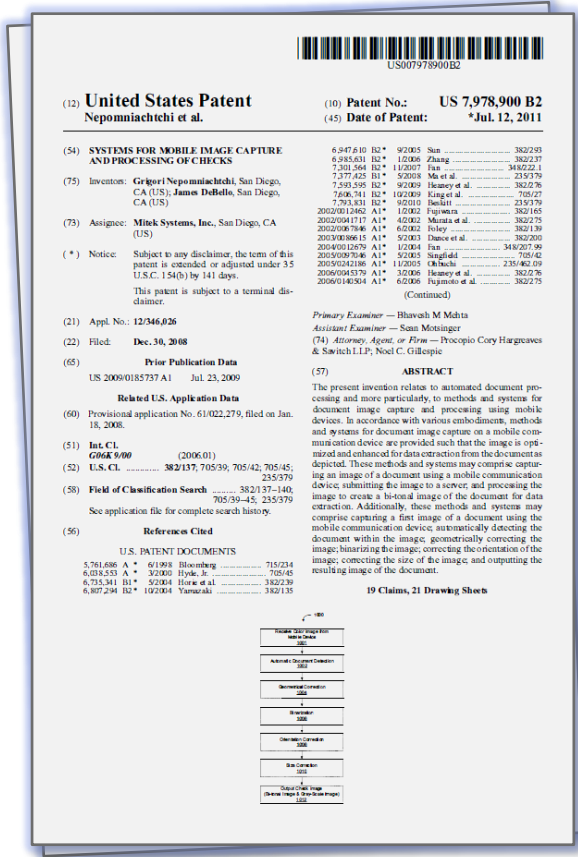


Nepomniachtchi Addresses Hand Shaking

Nepomniachtchi acknowledges that auto-focus can solve image defects in manual capture system:

image using a greater number of mega pixels. Other mobile cameras phones might have an auto-focus feature, automatic flash, etc. Generally, these features may improve an image when compared to mobile devices that do not include such features.

Ex. 1006 at 7:35-39



Wells Fargo Cannot Ignore Contemporaneous Objective Evidence Showing POSA's Embraced Manual Capture

Post-Priority Date Evidence May Be Used



“The Board has recognized that non-prior art evidence of what was known . . . ‘can be relied on for their proper supporting roles, e.g., indicating the level of ordinary skill in the art, and how one with ordinary skill in the art would have under-stood a prior art disclosure.’”

Yeda Research v. Mylan Pharmaceuticals Inc.,
906 F.3d 1031, 1041-42 (Fed. Cir. 2018)

Mr. Mott Is Focused On State of the Art As Of Priority Date

Ex. 2023 (2010):



12. In 2009, a financial institution would not have been willing to take on the risk of a new platform where the existing platform was already profitable and just beginning to achieve suitable rates of user adoption. Ex. 2023 (Gold Standard) (“According to a recent April 2010 report by Javelin Strategy and Research, ‘one in four consumers desire mobile remote deposit capture.’”).

Ex. 2016 at ¶ 12

15. A system of mobile remote deposit capture that caused user frustration and decreased adoption of the technology would not have been viewed as a viable solution by the financial services industry. See, e.g., Ex. 2023 (Gold Standard) at 3 (“[M]obile deposit technology must simultaneously offer a superior user experience while maintaining high performance standards for Check 21 processing. . . Users will not tolerate services which would require them to take a picture multiple times for each deposit!”)

Ex. 2016 at ¶ 15

Mr. Mott Is Focused On State of the Art As Of Priority Date

Ex. 2034 (2010):

Mitek Systems Granted Patent for Mobile Deposit® Application

Mobile Remote Deposit Capture Technology Enables Secure Check Deposits via Camera-equipped Smartphones



NEWS PROVIDED BY
Mitek Systems, Inc. →
Aug 18, 2010, 11:00 ET

SAN DIEGO, Aug. 18 /PRNewswire-FirstCall/ -- Mitek Systems, Inc. (OTC Bulletin Board: MITK) (www.miteksystems.com), an innovator of advanced-image analytics and mobile document capture applications for smartphones, today announced it has received a United States patent for its widely used Mobile Deposit® mobile Remote Deposit Capture (RDC) application.

(Logo: <http://photos.prnewswire.com/prnh/20100224/MITEKLOGO>)

(Logo: <http://www.newscom.com/cgi-bin/prnh/20100224/MITEKLOGO>)

In a process similar to banks accepting check deposits through ATM machines, the Mitek technology allows users to deposit personal or business checks into their bank or credit union accounts from anywhere at any time simply by snapping pictures of the checks with their smartphone cameras. The now-patented mobile banking application relies on Mitek's expertise in image-analysis and processing software for camera-equipped smartphones, including iPhone, BlackBerry and devices on the Android and Windows Mobile platforms.

USAA Ex 2034-p. 1
Wells Fargo v USAA
IPR2020-00091

8. Mitek's reliance on a manual-capture system was due in large part to how successful the system was. *See, e.g.,* Ex. 2034 ("Mitek Systems Granted Patent for Mobile Deposit Application") ("Customer submissions of check images via Mobile Deposit are typically accepted successfully about 95% of the time on the first try. The success rate of Mobile Deposit, along with the application's ease of use and security, are among the chief reasons why it has been adopted by all major technology solutions and applications services providers to the financial services industry.

Ex. 2016 at ¶¶ 8, 13, 15

Mr. Mott Has Extensive Contemporaneous Experience

Wells Fargo Ignores Mr. Mott's Extensive Experience From The Relevant Time Period:

- “With respect to Remote Deposit Capture (RDC) and mobile applications and services, I have worked in a number of capacities—all entailing my services as evaluator and designer of functionality, as well as assistance with development of technical specifications and interfaces for electronic check transactions and other payment types.” (Ex. 2001 at ¶12)
- “In 2005, I worked with IBM on development of a plan to upgrade its check processing services for major banks, a plan which included integration of the various new ways to pay with electronic checks and make deposits (RDC).” (Ex. 2001 at ¶15)
- “[T]he Federal Reserve appointed me Subject Matter Expert (“SME”) for its Mobile Payments Industry Workgroup (MPIW) initiative, where I co-authored industry white papers on Near-field Communications (NFC) mobile payments and industry requirements, use of tokens to protect payment credentials by mobile wallet companies, suitability of mobile devices for secure online transacting, and impact of industry protocols—including faster payments initiatives—on mobile transacting.” (Ex. 2001 at ¶19)

Mr. Mott Has Extensive Contemporaneous Experience



Stephen Mott
USAA's Expert



Wells Fargo Ignores Mr. Mott's Deposition Testimony:

Q. And there's no evidence supporting that 95 percent; it's just a statement in a press release, right?

A. Well, I also had statements from, personally, from Jim Debella, the CEO [of Mitek]. I heard the – all the demos that were being made in the conferences like TransPay. I mean, it was – they electrified the industry with reports, and there was several different, very positive reports about what Mitek was doing in terms of those capabilities.

IPR2020-00090/91 Ex. 1017 at 176:18-177:3;

IPR2020-00092 Ex. 1016 at 176:18-177:3

Wells Fargo's New Reply Argument That Human Judgment and Auto-Capture Can Be Combined Contradicts Pratt Declaration

Pratt Declaration Asserts Auto-Capture Should Occur Immediately After Yoon Criteria Satisfied



Christopher Pratt
Wells Fargo's Expert

**WELLS
FARGO**

Pratt Declaration

93. Yoon also discloses a technique for *automatic image capture* that provides another avenue to improve the quality of a captured image. A POSITA would understand from Yoon that the benefits of automatically capturing an image as soon as the system determines that the monitored quality criteria have been satisfied. WELLS-1008, ¶¶ 3, 9, 18, 19, 28, 32. A POSITA would further understand that the mobile device from Nepomniachtchi could be modified to implement the *automatic image capture* techniques taught by Yoon with the predictable result of automatically capturing check images upon determination of the image passing the monitoring criteria (*e.g.*, alignment and brightness levels).

IPR2020-00090/91 Ex. 1003 at ¶ 93;
IPR2020-00092 Ex. 1003 at ¶ 86

Industry Embraced Human Judgment



Peter Alexander

Wells Fargo's Expert
in IPR2019-01082
and IPR2019-01083

**WELLS
FARGO**

Q. What is required for it to be an accurate representation?

A. That it be of the **same visual quality as the hard copy check.**

Q. What does that mean, to be of the same visual quality?

A. Well, I know that in the banking industry, people -- a **human quite often looks at a check that's been deposited and decides if it's consistent** in terms of the -- for example, the courtesy value and the legal amount, and that sometimes they make corrections to -- or they reject the check based on not being able to read **amounts. So mostly it derives from visual inspection."**

Industry Embraced Human Judgment



Peter Alexander

Wells Fargo's Expert
in IPR2019-01082
and IPR2019-01083

**WELLS
FARGO**

Q. Sure. Does what it means for a document to be readable by a human the same as what it means for it to be readable by a machine?

A. Well, ***I think human perception is probably more reliable than a machine***, but the objective here is to get an image that is representative of the original hard copy document.

Ex. 2002 at 102:22-121:3

New Argument In Reply Contradicts Pratt Decl.

Wells Fargo In Reply

The Wells Fargo logo, consisting of the words "WELLS" and "FARGO" in yellow, stacked vertically on a red rectangular background.

“Yoon would not remove all user judgment—a user would still see an image of the check on screen and be able to adjust lighting, background surface, orientation of the check, focus, etc. prior to auto-capture taking an image.”

IPR2020-00090 Pet. Reply at 18; IPR2020-00091 Pet. Reply at 18;
IPR2020-00092 Pet. Reply at 18

Contradicts Pratt Dec. That POSA Wants Auto-Capture To Occur Immediately

The Wells Fargo logo, consisting of the words "WELLS" and "FARGO" in yellow, stacked vertically on a red rectangular background.

“A POSITA would understand from Yoon that the benefits of **automatically capturing an image as soon as the system determines that the monitored quality criteria have been satisfied**”

IPR2020-00090/91 Ex. 1003 at ¶ 93;
IPR2020-00092 Ex. 1003 at ¶ 86

New Arguments in Reply Are Improper

“Examples of indications that a ***new issue*** has been raised in a reply include new evidence necessary to make out a *prima facie* case for the patentability or unpatentability of an original or proposed substitute claim, such as a ***newly raised rationale to combine the prior art references that was not expressed in the petition.***”

P.T.A.B. Consolidated Trial Practice Guide (Nov. 2019) at 74

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No Motivation To Combine Nepomniachtchi And Yoon

Yoon Cannot Be Implemented By a POSA

No Motivation To Add Dance

No Motivation To Add Cho

Objective Indicia Of Non-Obviousness

Yoon Is Not A Mobile Device



Stephen Mott
USAA's Expert



Mott Declaration:

20. There is no disclosure in Yoon that the portable terminal is a mobile device, performs any processing on photographs of business cards, or communicates with a server. *See Ex. 2019, at 86:7-9 (Q. Does Yoon describe*

Ex 2016 at ¶ 20

Yoon Is Not A Mobile Device



Christopher Pratt
Wells Fargo's Expert

**WELLS
FARGO**

Q. Does Yoon describe its portable terminal being controlled by a mobile operating system?

A. No

Ex. 2019 at 86:7-9

Yoon Is A Specialized Device



Nishant Usapkar
Analytics Manager

**WELLS
FARGO**

- 20-years+ software engineer/architect
- Mobile deposit patents
- Developed Wells Fargo mobile deposit

Ex. 2011; Ex. 2005

Q. So, sir, you've reviewed Exhibit 4, which is a publication to Yoon, et al., U.S. 2007/0262148. And the question is, this ***describes a specialized device for business card image acquisition***, correct?

* * *

A. **Yes**, that's what it looks like.

Ex. 2005 at 107:1-8

Wells Fargo Untimely Evidence Should Not Be Considered

Untimely Reply Evidence

IPR2020-00090/91

- Ex. 1011
- Ex. 1012
- Ex. 1013
- Ex. 1014
- Ex. 1015
- Ex. 1016

IPR2020-00092

- Ex. 1010
- Ex. 1011
- Ex. 1012
- Ex. 1013
- Ex. 1014
- Ex. 1015

Wells offers ***no explanation*** for why this evidence was not included with the Petition

POSA Cannot Integrate Yoon



Peter Alexander
Wells Fargo's Expert

**WELLS
FARGO**

Q. Does a person of ordinary skill in the art have experience with designing mobile applications for mobile devices?

A. I didn't see that in the definition of a person of ordinary skill in the art.

Ex. 2002 at 17:15-17, 19-20

POSA Cannot Integrate Yoon



William Saffici

Wells Fargo's Expert
in District Court

**WELLS
FARGO**

Q. You, yourself, at the time of the Patents-in-Suit, would not have the technical ability to combine Yoon or Gang and Nepomniachtchi and Ramachandran into a working system, correct?

A. Me, personally –

Q. Yes, sir.

A. --from a technical point of view?

Q. Yes, sir.

A. Oh. That's correct

Ex. 2022 at 116:11-19

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Adding Dance To Nepomniachtchi Contradicts The Alleged Motivation to Modify Nepomniachtchi With Yoon

POSA Would Not Add Dance To Nepomniachtchi

Relevant Limitations in '756 patent:

Claim 6 (representative of 6, 16, 26)

6. The system of claim 1, where the processor is configured to monitor the image of the negotiable instrument in the field of view of the image capture device with respect to a monitoring criterion without providing feedback, through a user interface, regarding the monitoring of the image of the negotiable instrument in the field of view of the image capture device.

Claim 7 (representative of 7, 17, 27)

7. The system of claim 6, where the processor is configured to capture the image of the negotiable instrument with the image capture device without having provided feedback, through a user interface, regarding the monitoring of the image of the negotiable instrument in the field of view of the image capture device.

Claim 11

11. A system comprising:
an image capture device;
a memory; and
a processor in communication with the image capture device and the memory, the processor configured to:
monitor an image of a negotiable instrument in a field of view of the image capture device with respect to a monitoring criterion;
automatically capture, without user intervention, the image of the negotiable instrument with the image capture device when the image of the negotiable instrument passes the monitoring criterion; and
send the captured image of the negotiable instrument for depositing the negotiable instrument to a financial institution server through a communication pathway between the system and the financial institution server.

POSA Would Not Add Dance To Nepomniachtchi

The Wells Fargo logo, consisting of the words "WELLS" and "FARGO" in yellow, serif, all-caps font, stacked vertically on a red square background.

“A POSITA would be motivated to combine Nepomniachtchi and Dance due to the increased efficiency in capturing an image that has already passed certain monitored quality criteria, such as suitability for OCR processing.”

Dance Automatic Zoom Control Is Not Capture Without Human Intervention

In a second aspect, it would be desirable to improve operation of the camera, to provide automatic capture at an optimum resolution.

Broadly speaking, the second aspect of the invention is to control an electronic zoom lens of the camera in response to the detected image resolution (or the detected size of text characters in the image). For example, if the resolution is determined to be too small, then a zoom control signal can be generated to control the zoom lens to increase the zoom magnification (equivalent to moving the camera closer to the document). If the resolution is determined to be too large, then the zoom control signal can be generated to control the zoom lens to decrease the zoom magnification (equivalent to moving the camera further from the document).

Ex. 1009 at 2:28-41

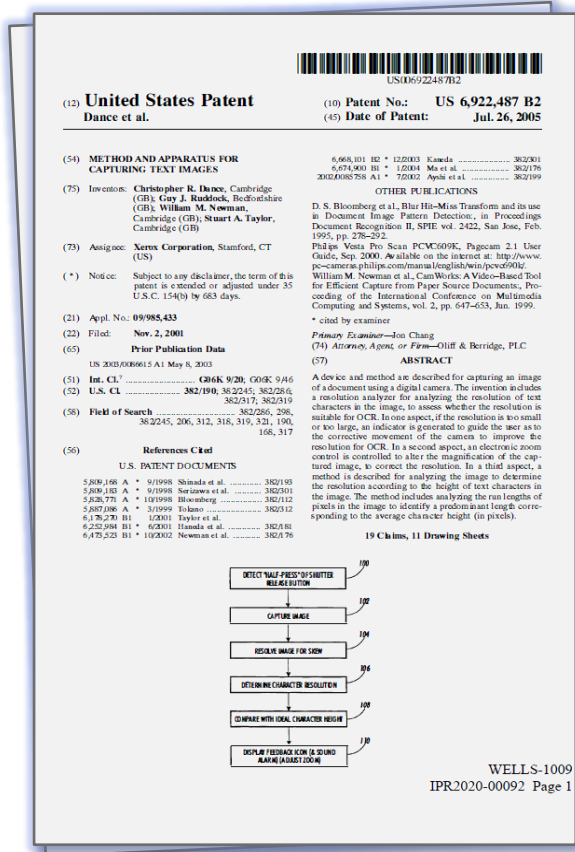
Dance Is A Manual Capture System

Dance:

As a modification of the above embodiment, step 52 may additionally generate a control output (output 62 shown in phantom in FIG. 1) for controlling a zoom mechanism of the camera, if the camera has a variable zoom, which can be controlled electronically. This would enable automatic “hands-free” operation of the zoom setting to ensure that documents are scanned at a sensible resolution without the user having to control the camera.

IPR2020-00092 Ex. 1009 at 8:17-24

- This is not automatic *image capture*
- Only automatic operation of the *zoom setting*

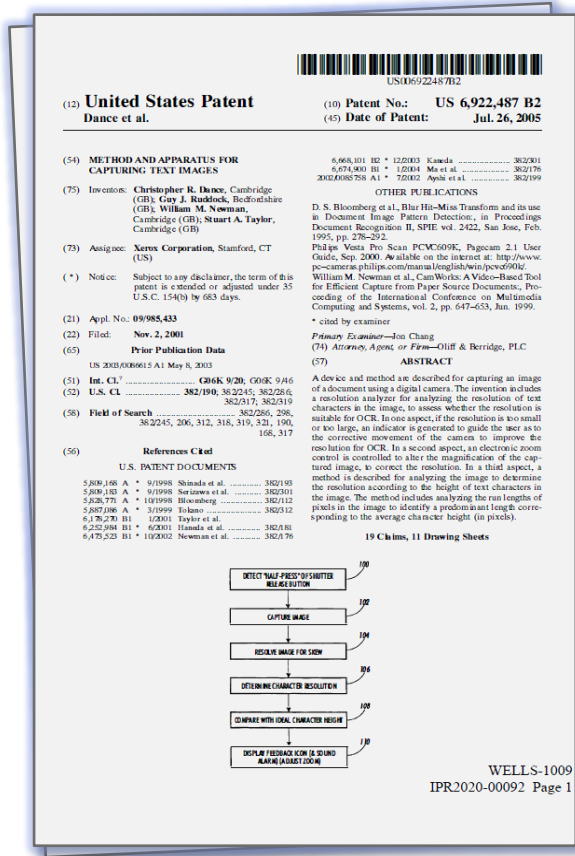


Dance Is A Manual Capture System

Dance:

FIG. 11 shows the general processing steps required for assessing the suitability of the image for OCR. The process is initiated at step 100 when the processor detects that the user has partially pressed the shutter release button 78 to a “half-pressed position”. (In FIG. 9, the shutter release button 78 has two outputs, one corresponding to depression to a “half-press” position, and the other corresponding to full depression of the button). At step 102, an image is captured using the imaging device 82, and is stored (at least temporarily) in the memory 30.

IPR2020-00092 Ex. 1009 at 9:12-20



Nepomniachtchi Already Corrects Resolution

Nepomniachtchi:

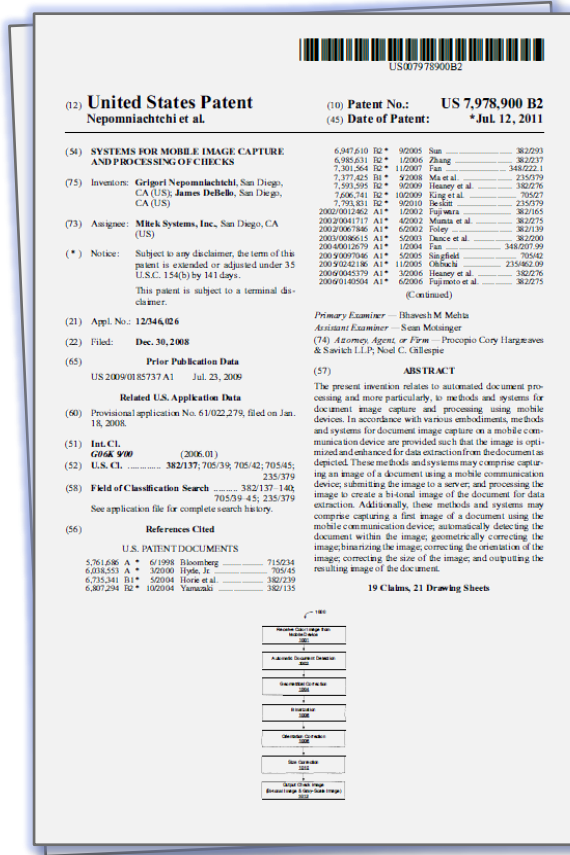
“The automatic document detection module can take into consideration . . . various other characteristics of the mobile engine (e.g., **resolution**, dimensions, etc.)”

Ex. 1006 at 11:67-12:6

“The resolution of the image may then be increased and the image converted to a black-and-white image.”

Ex. 1006 at 8:53-55

- No evidence that Dance is more efficient than Nepomniachtchi, which already corrects for poor resolution

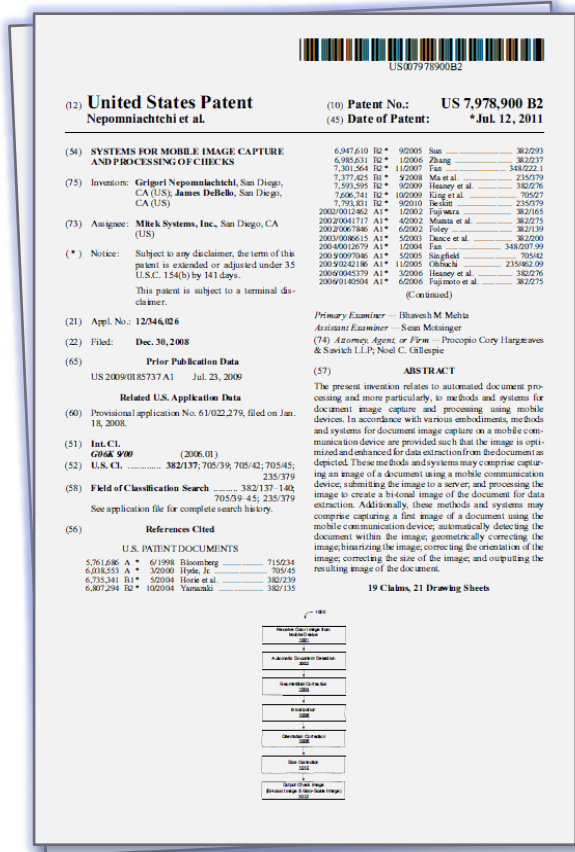


Nepomniachtchi Already Addresses Auto-Focus

Nepomniachtchi acknowledges that auto-focus can solve image defects in manual capture system:

image using a greater number of mega pixels. Other mobile cameras phones might have an auto-focus feature, automatic flash, etc. Generally, these features may improve an image when compared to mobile devices that do not include such features.

Ex. 1006 at 7:35-39



WF Claims POSA Motivated To Minimize Computational Burden On Mobile Device



**Christopher
Pratt**
Wells Fargo's
Expert

**WELLS
FARGO**

“A POSITA would understand that excessive computation performed on a mobile device necessarily leads to slower desirable response times and potential user dissatisfaction”

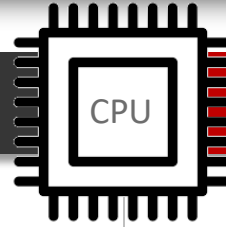
Ex. 1003 at ¶ 84

“A POSITA would be motivated to minimize the potential for errors and/or the need for performing computationally intensive process by checking things like alignment prior to further image processing.”

Ex. 1003 at ¶ 94

Computational Burden Increase From Adding Dance

Nepomniachtchi



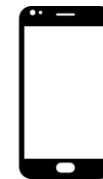
Nepomniachtchi + Dance

 Pre-existing autofocus, no image quality analysis

 Analyze image quality
Post-Capture



WF alleges analysis **until image passes auto-focus criterion**



Analyze image quality
Post-Capture

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Challenged Claims Adjust Alignment Guide Based on Button

'197 Patent Cl. 17

17. The non-transitory computer-readable medium of claim 14, wherein the instructions are further executed by the processor to adjust the alignment guide according to received inputs corresponding to an adjustment button of the camera.

'198 Patent Cl. 9

9. The system of claim 1, wherein the processor is further configured to receive instructions inputted to the mobile device from an adjustment button of the camera for adjusting the alignment guide, and adjust the alignment guide according to the received instructions.

'198 Patent Cl. 16

16. The non-transitory computer-readable medium of claim 11, wherein the instructions are further executed by the processor to adjust the alignment guide according to received inputs corresponding to an adjustment button of the camera.

'198 Patent Cl. 18

18. The non-transitory computer-readable medium of claim 11, wherein the instructions are further executed by the processor to adjust the alignment guide according to received inputs from the camera.

Cho's Adjustment Reintroduces Alleged Manual Control Error

Petitioner Uses Yoon To Avoid Adjustment Buttons and Menus:

“The benefits taught by Yoon with regard to the automatic image capture using an alignment guide (e.g., improved image quality through reduction of shaking . . .)”

IPR2020-00090 Pet. at 20-21; IPR2020-00091 Pet. at 18

“Yoon . . . can improve captured image quality by ‘preventing shaking when a user selects a key button nor a menu in order to photograph a business card.’”

IPR2020-00090 Pet. at 15; IPR2020-00091 Pet. at 14-15

Q. In the Yoon system, the alignment guide is a ***fixed size***, right?

A. ***Correct***

Q. And I think you said the user would move the camera closer or farther away from the document in order to fit it within the alignment guide; is that right?

A. That's correct

Ex. 2019 at 119:10-17

Cho's Adjustment Reintroduces Alleged Manual Control Error

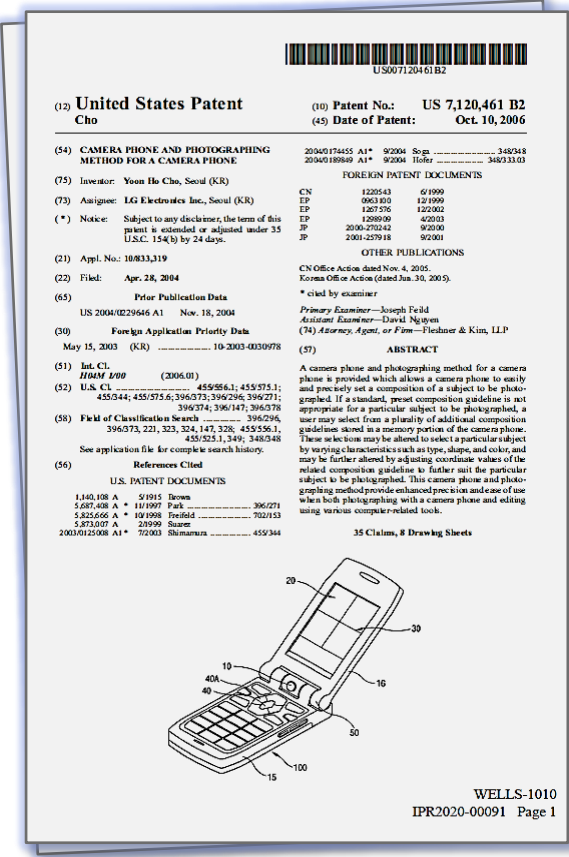
Cho:

The guidelines may be provided in a menu (not shown) from which the user can then select a desired composition guideline, or a standard composition guideline may be initially displayed which the user may then adjust.

Ex. 1010 at 3:1-5

For example, the user may adjust a composition guideline 30 displayed on the display unit 20 of the camera phone 100 by using, for example, an input device 40, which may include a direction input device 40A, such as a **direction key**, provided on the camera phone 10.

Ex. 1010 at 3:5-9



Cho Adds Nothing New To Nepomniachtchi

- **Nepomniachtchi already corrects for misalignment and has a “size correction operation”**

Ex. 1006 at 10:5-9, 19:38-51

- **Watanabe already has different sized alignment guides for selection**

IPR2020-00090/91 Ex. 1009 at 4:65-5:1, 7:5-10

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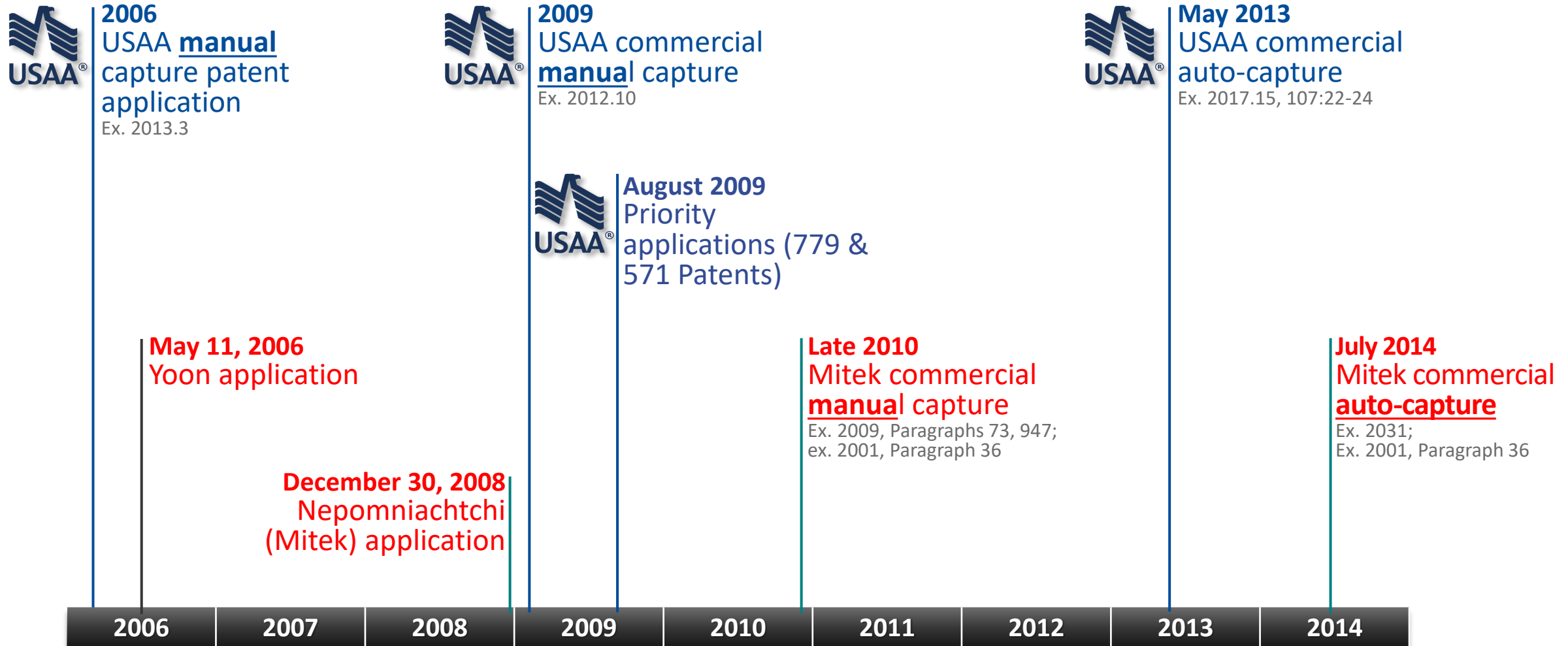
Yoon Cannot Be Implemented By a POSA

No Motivation To Add Dance

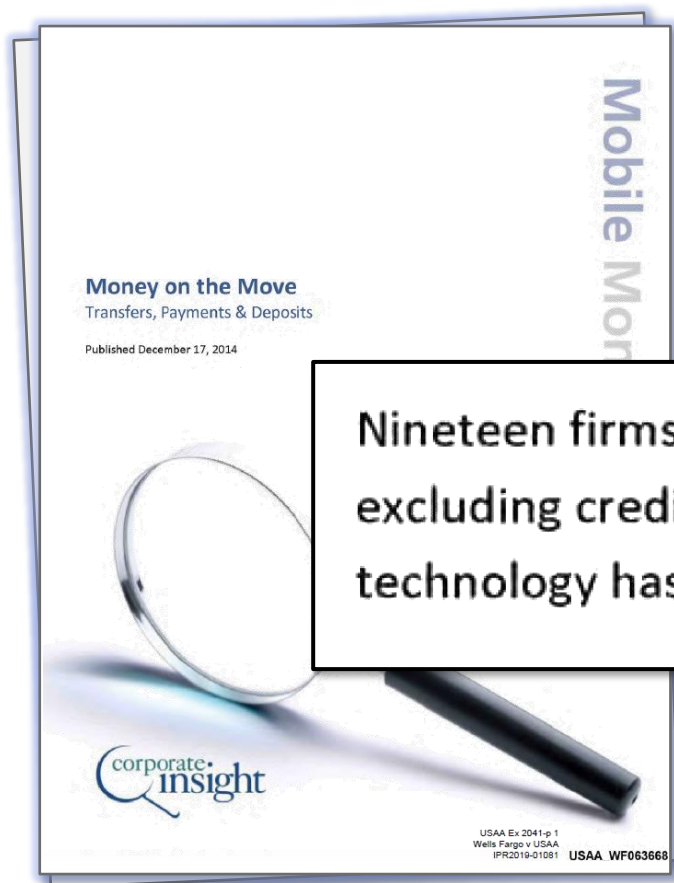
No Motivation To Add Cho

Objective Indicia Of Non-Obviousness

Industry Embraced Manual Capture And Post-Capture Quality Analysis



USAA Introduced Industry To Manual Capture Check Deposit



Nineteen firms, or 79% of the full *Mobile Monitor* coverage group (and 86% of the group excluding credit card firms), offer mobile check deposits, showing how prevalent this technology has become since USAA introduced it in 2009. All banks in our coverage group,

Ex. 2012 at 10

Mitek Implemented Nepomniachtchi



Saffici's Invalidity Report

“Mitek, the assignee of Nepomniachtchi produced a mobile application for an iPhone that demonstrates the features of Nepomniachtchi.”

Ex 2009 at ¶ 73

Wells Fargo's Opening Statement

“So Wells Fargo launched its Mobile Deposit feature in May of 2012. Now, that's on our timeline, and it's three years before -- three years before the patents in this case issued. ***With Mitek's help, we offered our customers manual capture.*** The customer touched the screen of the phone, the little button, to take the picture of the front and the back of the check.”

Ex 2017 at 59:23-60:6

USAA Was First To Invent Auto-Capture Check Deposit



Peter Alexander
Wells Fargo's Expert

**WELLS
FARGO**

Q. Can you identify one system anywhere in the world before the '571 patent that involved pre-capture image quality analysis of a check image?

A. I can't recall any right now.

Ex. 2002 at 123:16-19

Unpredictable Field



Bharat Prasad
Inventor of
'197, '198, '756
Patents

“[I]t was a ***completely uncontrolled environment***. The lighting conditions, the brightness, the way the person is standing in the room, the background behind the check, all of this had to be well thought out. A single solution had to work in multiple environments.”

Ex. 2026 at 249:2-12

“And the next step to it was through autocapture . . . all this had to happen in realtime where a member is trying to hold the check in front of the phone and do it all seamlessly, very fast, so that people who deposit checks would not go away.”

Ex. 2026 at 249:13-250:4

Unpredictable Field



William Saffici

Wells Fargo's Expert

**WELLS
FARGO**

Q. So we'll do it in pieces. You agree that mobile device capture of check images is a young field, correct?

A. Yes.

Ex. 2003 at 78:2-6

Q. You believe that it's unpredictable how a given design will impact the rate of success of image acquisition in the mobile remote deposit capture, correct?

A. At the design level, I would agree.

Ex. 2004 at 114:19-23

USAA Went In A Different Direction By Rejecting Manual Capture



“Evidence that others were ‘going in different ways’ is strong evidence that the [inventors] way would not have been obvious”

In re Cyclobenzaprine Hydrochloride Extended Release Capsule Patent Litigation,
676 F.3d 1063, 1082 (Fed. Cir. 2012)

Dramatic Benefit From Patented Invention



Adam Newman
Senior Software
Developer

Newman Declaration:

5. Attached as Exhibit A is a true and correct copy of USAA's performance data for the iPhone for April, May, and June of the year in which the Auto Capture system was introduced, Exhibit A provides the failure rate for checks deposited through USAA's Deposit@Mobile platform using an iPhone. In April, prior to the introduction of Auto Capture, image failure rates on the iPhone were 15.97%. In June, the month after the introduction of Auto Capture, image capture failure rates on the iPhone were 9.31%. The 6.66% reduction in failure rate from 15.97% to 9.31% constituted a 41.69% drop in the failure rate.

Ex. 2024 at ¶15

Auto-Capture Was Not Obvious

Mitek 2008 Claims:

“Mitek Systems develops and markets *the most sophisticated and complete* set of software solutions and tools to test, clean up, read, and authenticate imaged documents.”

Ex. 2006

- Why did this not include auto-capture?
- Wouldn't any technology that reduced failed deposits by **over 40%** be part of “the most sophisticated and complete set of software solutions” if obvious?

USAA Practices Preferred Embodiment

“a monitoring criterion”

One or more “monitoring criterion”

image. The monitoring criteria may be based on one or more of light contrast on the image, light brightness of the image, positioning of the image, dimensions, tolerances, character spacing, skewing, warping, corner detection, and MICR (magnetic ink character recognition) line detection, as described further herein. In an implementation, one or more histograms may be determined using the image being monitored. The histograms may be used in conjunction with monitoring criteria, as described further herein.

USAA Commercial Embodiment

- **Acceptable dimensions**
- **Skew**
- **Brightness**
- **Noise**
- **Corner detection**
- **Cropping**
- **Warping**
- **Readable check fields**

Industry Immediately Followed USAA's Auto-Capture Success



William Saffici

Wells Fargo's Expert

**WELLS
FARGO**

Q. You don't dispute that *auto capture is widely acknowledged as the foundation for successful mobile* check deposit, fair?

A. *I would agree with that.*

Ex. 2021 at 92:23-93:8

Clear Evidence of Nexus



Adam Newman
Senior Software
Developer

Newman Declaration:

4. One feature that USAA implemented to minimize failed deposits through Deposit@Mobile is the Auto Capture feature. Auto Capture has the following features: (a) the system monitors the image; (b) the system determines whether the image is properly framed within the alignment guide; (c) the system determines whether industry criteria for image quality are satisfied by the image; (d) when the system determines that the image is properly aligned, and determines that industry criteria for image quality are satisfied, the system automatically captures the image; (f) if the system determines that industry criteria for image quality are not satisfied, in real-time the system sends instructions to the user to adjust the image in order to satisfy the criteria; (g) after the system determines that proper adjustments have been made, the system captures the image. The Auto Capture features also provides real-time instructions to the user about how to adjust the image based on analysis by the system after the system determines that certain industry wide criteria have not been met. This system is extremely important to

Mitek Described Auto-Capture As “New” in 2014

Mitek Claimed It “eliminates error”

SAN DIEGO, CA – July 15, 2014 —Mitek (NASDAQ: MITK, www.miteksystems.com), the leading innovator of mobile imaging for financial transactions, announced that ten leading financial institutions have now deployed its new [mobile capture](#) technology, Mitek MiSnap with Mobile Deposit.

Mitek MiSnap eliminates user error by providing real-time feedback until a suitable image is detected, at which point it automatically captures the image. This technology is now the mobile capture component of Mitek's award winning Mobile Deposit.

Ex. 2031 at 2

Copying



Paul Rosati

Mobile Deposit
Product Manager

**WELLS
FARGO**

Q. You joined the mobile product deposit group at Wells Fargo in 2014, correct?

A. Yes.

Q. You've been in that project for five years, correct?

A. The product manager for five years, yes.

Q. At some point after the date of joining that product, your group examined the user interfaces that USAA uses for its mobile check deposit system, correct?

A. Specific to manual and auto capture and specific to multiple check capture.

Ex. 2017 at 8:5-15 (Ex p.27)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WELLS FARGO BANK, N.A.
Petitioner,

v.

UNITED SERVICES AUTOMOBILE ASSOCIATION,
Patent Owner.



IPR2020-00090
IPR2020-00091
IPR2020-00092

CERTIFICATE OF SERVICE

Pursuant to Board's Order Setting Oral Argument issued January 12, 2021, I hereby certify that on February 8, 2021, a complete copy of the foregoing document **PATENT OWNER'S DEMONSTRATIVES** for the above referenced IPRs were served upon the following, by ELECTRONIC MAIL:

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