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(54) **REAL-TIME ADJUSTABLE WINDOW FEATURE FOR BARCODE SCANNING AND PROCESS OF SCANNING BARCODE WITH ADJUSTABLE WINDOW FEATURE**

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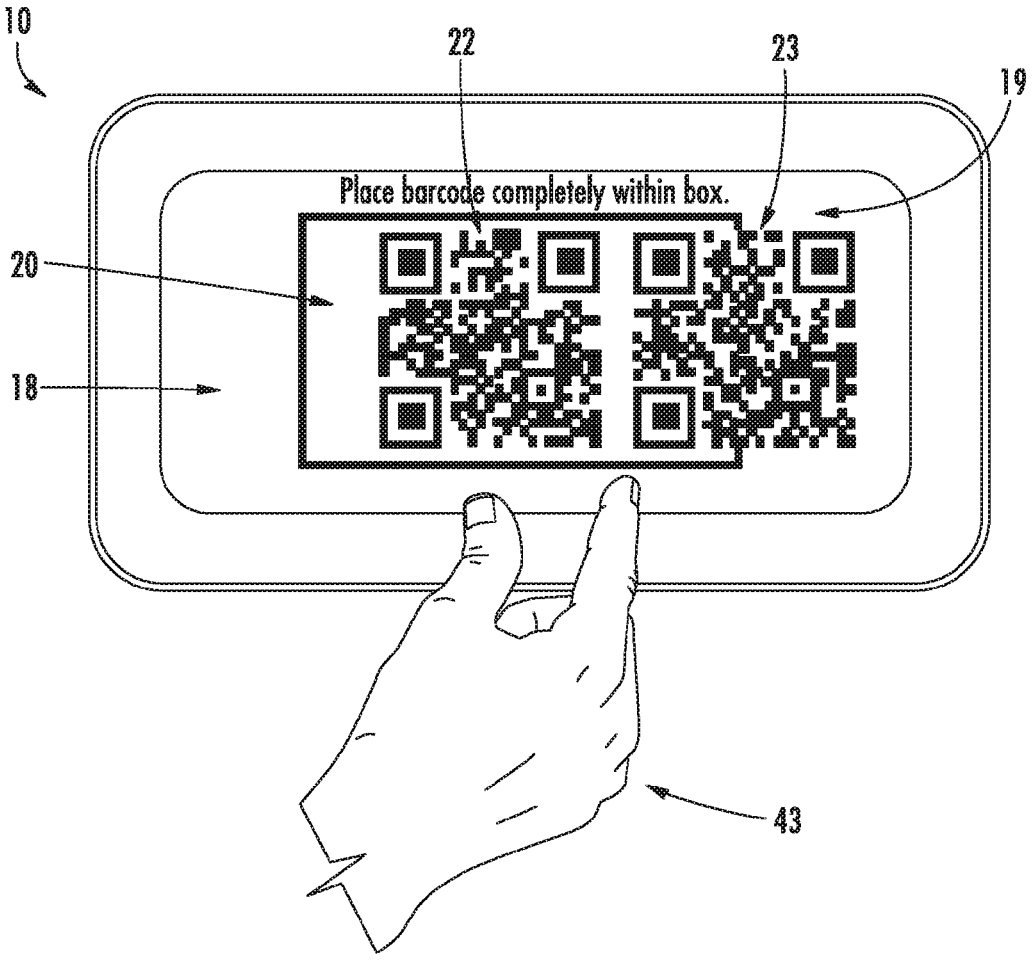
(57) **ABSTRACT**

A mobile bar code scanning device with a pinch-to-window feature includes an embedded camera and a user interface system having a visual display. The user interface system enables the user to access features of the mobile barcode scanning device with touch gestures. The mobile barcode scanning device also includes a barcode scanning application initialized by a user of the mobile barcode scanning device. The mobile barcode scanning device also includes an operating system communicatively coupled to the embedded camera, the barcode scanning application, and the user interface system. The visual display provides a viewfinder for the embedded camera in the barcode scanning application. The user-defined pinch-to-window feature is real-time adjustable in size, orientation, and position by at least a two-point touch gesture.



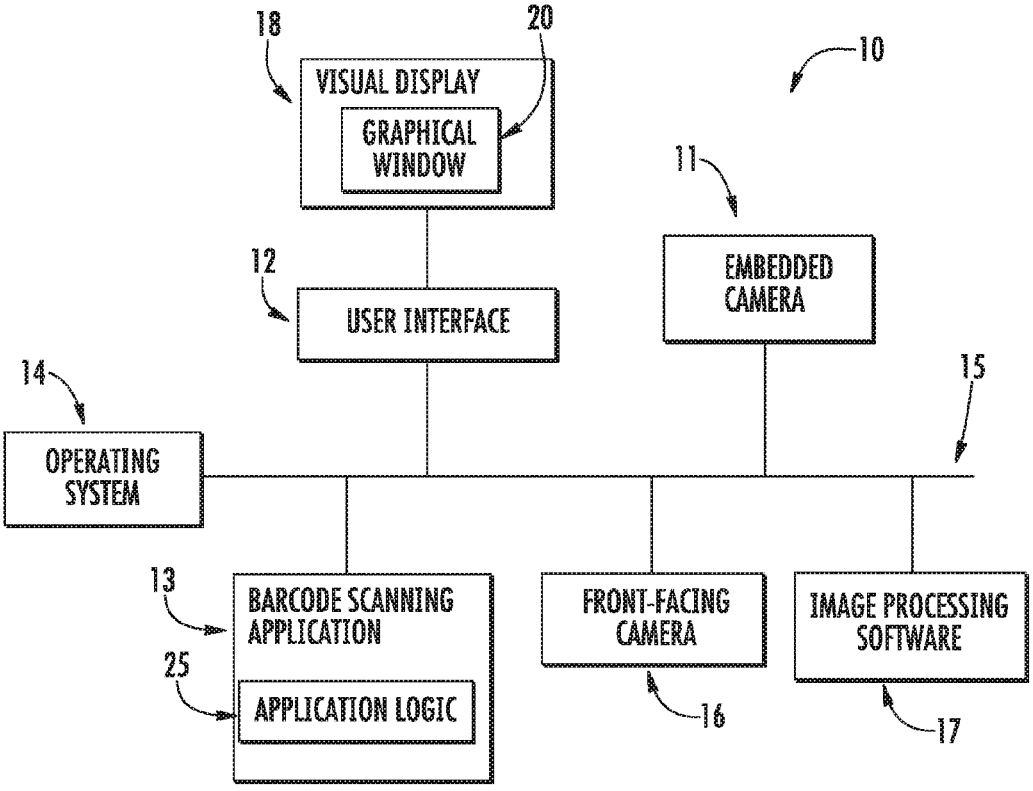

18
20
10
VISUAL DISPLAY
GRAPHICAL WINDOW
11
12
EMBEDDED CAMERA
USER INTERFACE
14
15
OPERATING SYSTEM
13
BARCODE SCANNING APPLICATION
25
APPLICATION LOGIC
FRONT-FACING CAMERA
IMAGE PROCESSING SOFTWARE
16
17

FIG. 1

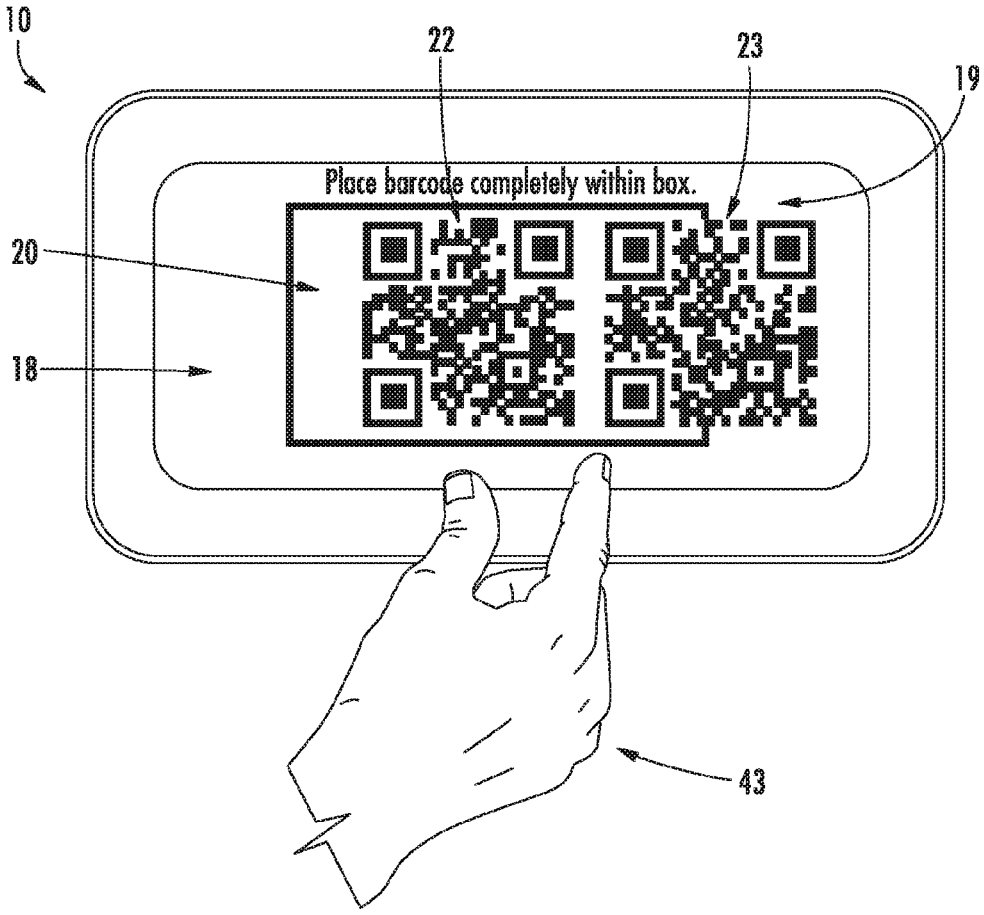


FIG. 2A

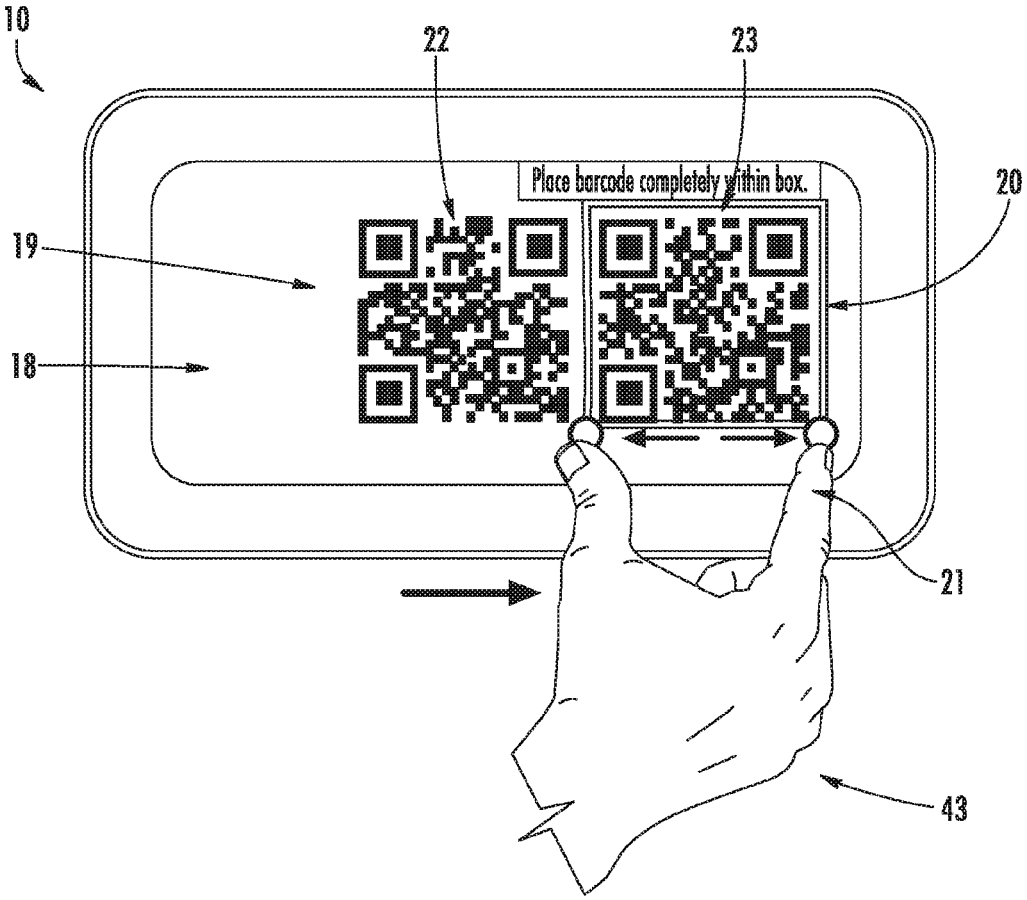


FIG. 2B

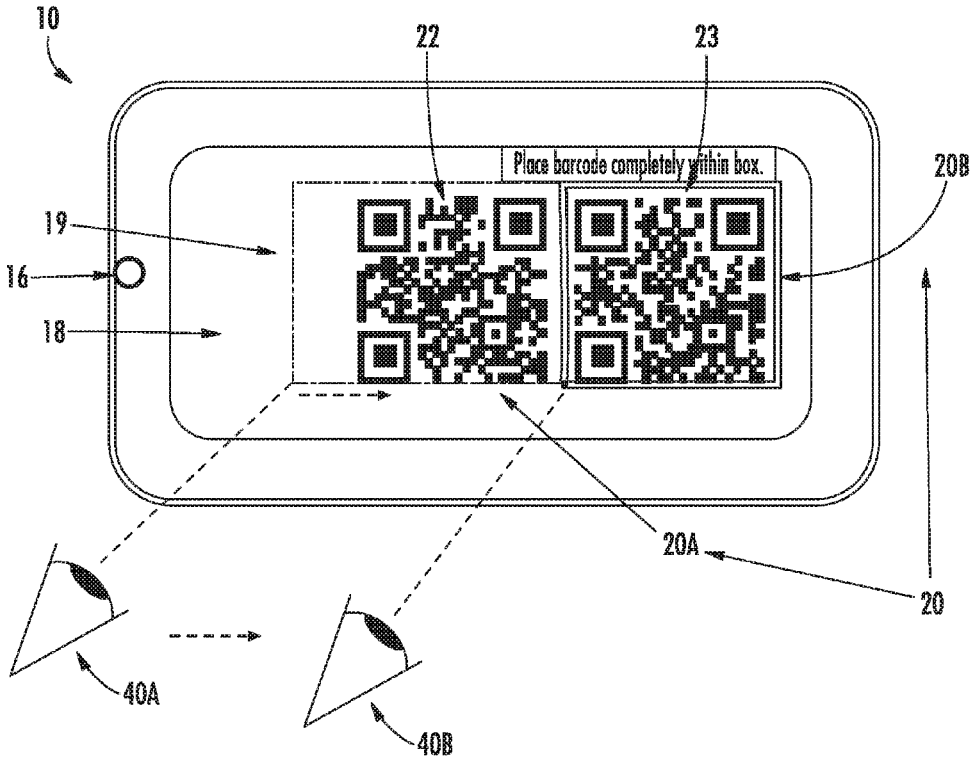

10
22
23
Place barcode completely within box.
20B
19
16
18
20A
20
40A
40B

FIG. 3

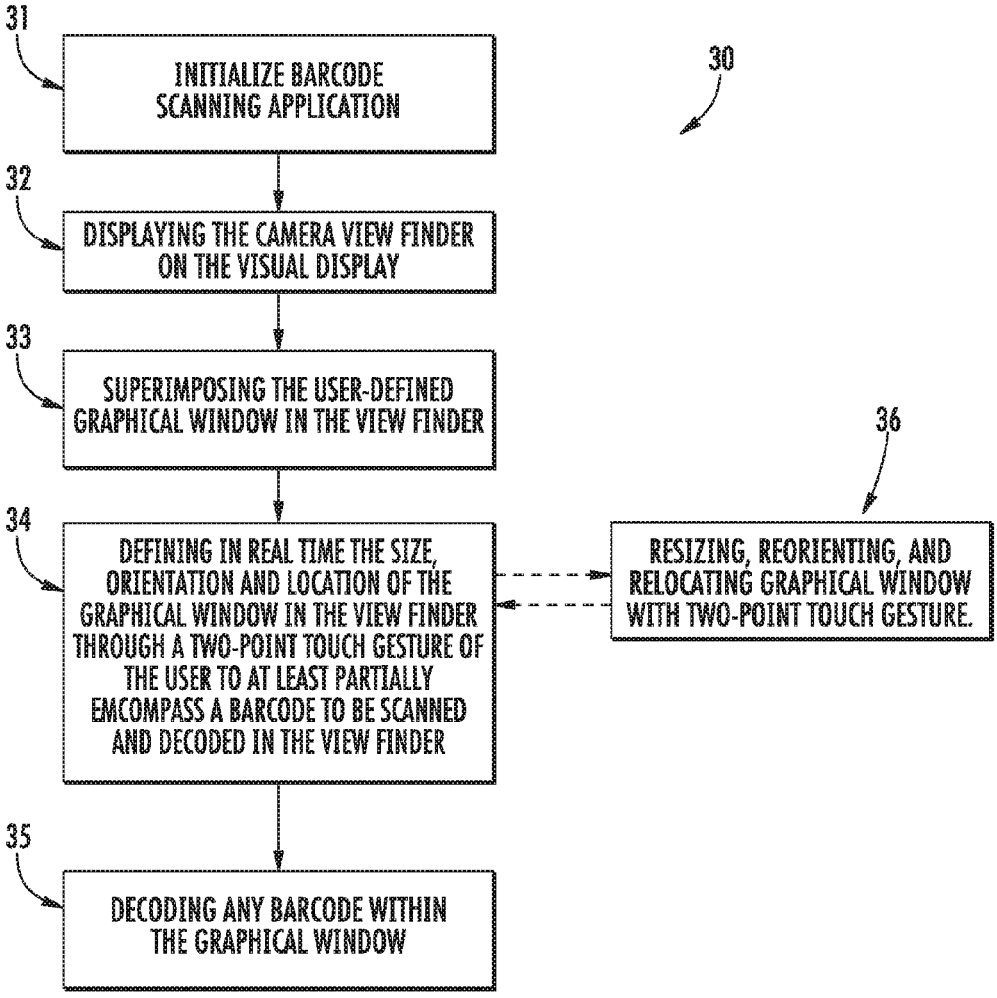

31
INITIALIZE BARCODE SCANNING APPLICATION
30
32
DISPLAYING THE CAMERA VIEW FINDER ON THE VISUAL DISPLAY
33
SUPERIMPOSING THE USER-DEFINED GRAPHICAL WINDOW IN THE VIEW FINDER
36
34
DEFINING IN REAL TIME THE SIZE, ORIENTATION AND LOCATION OF THE GRAPHICAL WINDOW IN THE VIEW FINDER THROUGH A TWO-POINT TOUCH GESTURE OF THE USER TO AT LEAST PARTIALLY EMCOMPASS A BARCODE TO BE SCANNED AND DECODED IN THE VIEW FINDER
RESIZING, REORIENTING, AND RELOCATING GRAPHICAL WINDOW WITH TWO-POINT TOUCH GESTURE.
35
DECODING ANY BARCODE WITHIN THE GRAPHICAL WINDOW

FIG. 4

REAL-TIME ADJUSTABLE WINDOW FEATURE FOR BARCODE SCANNING AND PROCESS OF SCANNING BARCODE WITH ADJUSTABLE WINDOW FEATURE

CROSS-REFERENCE TO PRIORITY APPLICATION

[0001] This U.S. nonprovisional application hereby claims the benefit of U.S. Patent Application No. 62/098,072 for Real-Time Adjustable Window Feature for Barcode Scanning and Process of Scanning Barcode with Adjustable Window Feature (filed Dec. 30, 2014), which is hereby incorporated by reference in its entirety

FIELD OF THE INVENTION

[0002] The present invention relates to mobile barcode scanning devices and processes of scanning barcodes.

BACKGROUND

[0003] There is a problem common to barcode scanning systems when multiple barcodes are near each other and a user wants to scan only one of the barcodes. Most barcode decoding solutions are not capable of targeting a specific barcode within the field of view when other barcodes are in close proximity, so all of the barcodes decoding information may be returned to the business logic.

[0004] One solution to the problem relies on the business logic to discern which barcode is needed, but sometimes this may not be possible due to the similarity of the barcodes scanned.

[0005] Another solution to the problem could be to define a window within the field of view of the barcode scanning device only within which decoding can occur. However, this solution is not very flexible and the dimensions may need to be altered frequently.

[0006] Therefore, a need exists for a barcode scanning process and device which can be flexibly adjusted to scan only the desired barcode.

SUMMARY

[0007] Accordingly, in one aspect, the present invention embraces a feature on a mobile barcode scanning device for flexibly adjusting a barcode scanning window in real-time.

[0008] The mobile barcode scanning device is provided with an embedded camera and a user interface system. The user interface system is provided with a visual display and is configured to allow the user to access features of the mobile barcode scanning device with touch gestures on the visual display. The mobile barcode scanning device is further provided with a barcode scanning application. The barcode scanning application may be initialized by a user of the mobile barcode scanning device. The mobile barcode scanning device is further provided with an operating system. The operating system is communicatively coupled to the embedded camera, the barcode scanning application, and the user interface system. The visual display provides a viewfinder for the embedded camera in the barcode scanning application.

[0009] The feature of the mobile barcode scanning device includes a user-defined graphical window overlaid on the viewfinder. The user-defined graphical window is adjustable in size, orientation, and position by at least a two-point touch gesture on the visual display by the user of the mobile barcode scanning device. The two-point touch gesture is capable of resizing, reorienting, and relocating the graphical window to a size, orientation and location of the two points in real-time, whereby the barcode to be scanned can be defined in the adjustable graphical window by the user in real-time.

[0010] In an exemplary embodiment, the two-point touch gesture on the visual display is a pinch gesture with two fingers of the user.

[0011] In another exemplary embodiment, the two-point touch gesture is a touch gesture with a pair of styli (i.e., styluses).

[0012] In yet another exemplary embodiment, the two-point touch gesture is a multi-touch gesture.

[0013] In yet another exemplary embodiment, the mobile barcode scanning device also includes a front-facing camera (i.e., a camera that faces the user) and image processing software. The operating system is communicatively coupled to the front-facing camera and the image processing software. The front-facing camera and image processing software allow the graphical window to be repositioned by an eye-tracking capability of the mobile device.

[0014] In yet another exemplary embodiment, the mobile barcode scanning device is a smartphone.

[0015] In yet another exemplary embodiment, the mobile barcode scanning device is a smartwatch.

[0016] In yet another exemplary embodiment, the mobile barcode scanning device is a tablet computer.

[0017] In yet another exemplary embodiment, the act of the user to initialize the barcode scanning operation can be a voice command, a swiping motion of a stylus on the visual display, a touch gesture on the visual display, or a physical motion of the mobile barcode scanning device.

[0018] In yet another exemplary embodiment, the barcode scanning application is configured so that a barcode can be successfully decoded if the barcode is partially encompassed by the graphical window.

[0019] In yet another exemplary embodiment, the barcode scanning application is configured so that a barcode can be successfully decoded if the barcode is fully encompassed by the graphical window.

[0020] In another aspect, the present invention embraces a process of scanning a barcode with a mobile device.

[0021] The mobile device has an embedded camera and a user interface system. The user interface system is provided with a visual display. The user interface system is configured to allow the user to access features of the mobile device with touch gestures on the visual display. The mobile barcode scanning device is also provided with a barcode scanning application and an operating system. The operating system is communicatively coupled to the embedded camera, the barcode scanning application, and the user interface system. The visual display provides a viewfinder for the embedded camera. The viewfinder has a user-defined graphical window in which a barcode to be scanned and decoded successfully must be at least partially encompassed when the barcode scanning application begins scanning. The graphical window is adjustable in size, orientation, and position by a two-point touch gesture of a user of the mobile barcode scanning device.

[0022] The process includes the steps of (i) initializing the barcode scanning application; (ii) displaying the camera viewfinder on the visual display; (iii) superimposing the user-defined graphical window in the viewfinder; (iv) defining in real-time the size, orientation, and location of the graphical window in the viewfinder through a two-point touch gesture of the user to at least partially encompass a barcode to be

scanned and decoded in the viewfinder; and (v) decoding any barcode within the graphical window.

[0023] In an exemplary embodiment, the defining step is accomplished by resizing, reorienting, and relocating the graphical window in real-time by a two-point touch gesture to a size, orientation, and location of the two points. Thus, the barcode to be scanned can be defined in the adjustable graphical window by the user in real-time.

[0024] In another exemplary embodiment, the two-point touch gesture is a two-finger pinch gesture.

[0025] In another exemplary embodiment, at least part of the defining step is accomplished by an eye-tracking capability of the mobile device. The mobile device is further provided with a front-facing camera and image processing software. The operating system is communicatively coupled to the front-facing camera and the image processing software. The eye-tracking capability is carried out by a cooperation between the front-facing camera and image processing software. For example, the eye-tracking capability can help relocate the graphical window in real-time.

[0026] In yet another exemplary embodiment, the barcode scanning application is configured so that a barcode to be scanned and successfully decoded must be fully encompassed in the graphical window in the viewfinder.

[0027] In another exemplary embodiment, the mobile barcode scanning device may be a smartphone, a smartwatch, or a tablet computer.

[0028] In another exemplary embodiment, the initializing step is accomplished by a physical act of the user. The physical act of the user to initialize the barcode scanning operation can be a voice command, a swiping motion of a stylus on the visual display, a touch gesture on the visual display, or a physical motion of the mobile barcode scanning device.

[0029] In another exemplary embodiment, the barcode scanning application is provided with application logic. The application logic performs required data processing of the barcode scanning application. The initializing step is accomplished by the application logic.

[0030] The foregoing illustrative summary, as well as other exemplary objectives and/or advantages of the invention, and the manner in which the same are accomplished, are further explained within the following detailed description and its accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] FIG. **1** depicts a block diagram of a mobile barcode scanning device in accordance with the present invention.

[0032] FIG. **2**A and FIG. **2**B schematically depict the adjustable user-defined graphical window in use on mobile barcode scanning device in accordance with the present invention.

[0033] FIG. **3** schematically depicts another embodiment the adjustable user-defined graphical window in use on mobile barcode scanning device in accordance with the present invention.

[0034] FIG. **4** depicts a flowchart of a process of scanning a barcode with a mobile barcode scanning device according to the present invention.

DETAILED DESCRIPTION

[0035] The present invention will now be described more fully hereinafter with reference to the accompanying drawings in which exemplary embodiments of the invention are shown. The invention, however, may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. In the drawings, like numbers refer to like elements throughout.

[0036] In one aspect, the present invention embraces a feature on a mobile barcode scanning device for adjusting a user-defined barcode scanning window in real-time.

[0037] Referring now to FIG. **1**, an exemplary mobile barcode scanning device **10** is provided with an embedded camera **11**, a user interface system **12**, which includes a visual display **18**, a barcode scanning application **13**, and an operating system **14**. The user interface system **12** is configured to allow the user to access features of the mobile barcode scanning device **10** with touch gestures on the visual display **18**. The operating system **14** communicatively links the embedded camera **11**, the user interface system **12**, and the barcode scanning application **13**. The barcode scanning application **13** may be initialized by an act of a user of the mobile barcode scanning device **10**. The mobile barcode scanning device **10** may be provided with a system bus **15** that assists the operating system **14** to be communicatively linked to other components. There may also be other interface circuits and components, such as memory (not shown) and the like.

[0038] As discussed previously, the barcode scanning application **13** may be initialized by an act of a user of the mobile barcode scanning device **10**. The act of the user may include a voice command, a swiping motion of a stylus on the visual display **18**, a touch gesture on the visual display **18**, a physical motion of the mobile barcode scanning device **10**, or a combination of any of these. Alternatively, the barcode scanning application **13** may be provided with application logic **25**, which performs required data processing of the barcode scanning application **13**. The initialization of the barcode application **13** may be accomplished by the application logic **25**.

[0039] The mobile barcode scanning device **10** may also include a front-facing camera **16** and image processing software **17** to provide eye-tracking capability to the mobile barcode scanning device **10**. The operating system **14** is communicatively coupled to the front-facing camera **16** and the image processing software **17**.

[0040] The mobile barcode scanning **10** device may be a smartphone, a smartwatch, or a tablet.

[0041] Referring now to FIGS. **2**A and **2**B, in an exemplary embodiment of the inventive feature the mobile barcode scanning device **10**, which is shown in the block diagram of FIG. **1**, is schematically illustrated in FIG. **2**A before the graphical window **20** is adjusted for size, position, and orientation, and in FIG. **2**B after the graphical window **20** is adjusted for size, position, and orientation. FIG. **2**A shows the mobile barcode scanning device **10** with a visual display **18** and viewfinder **19** on the visual display **18** after the bar code application (not shown) has been initialized. A graphical window **20** is in the center of the viewfinder **19**. Two barcodes **22** and **23** are in close proximity to each other in the viewfinder **19**. The graphical window **20** encompasses the entire first barcode **22** and a portion of the adjacent, second barcode **23**. In FIGS. **2**A and **2**B, barcode **23** is the barcode to be scanned and decoded. A user **43** is ready to adjust the graphical window **20**.

[0042] Referring now to FIG. **2**B, the user **43** has moved the graphical window **20** to the right side of the viewfinder **19**, and resized the graphical window **20** to encompass only the barcode **23** to be decoded. The user **43** uses a two-point touch gesture **21** (e.g., a pinch gesture **21**) to move and resize the

graphical window **20** in real-time, such that the graphical window **20** is sized, positioned, and oriented at the location of the two-point touch gesture **21**.

[0043] The two-point touch gesture **21** may be a pinch gesture **21** as shown in the FIG. **2**B, but alternatively may be a two-point gesture **21** made with stylus (not shown) or a multipoint gesture (not shown).

[0044] The barcode **23** to be decoded may be fully encompassed by the graphical window **20** as shown in the FIG. **2**B or may be partially encompassed by the graphical window **20** depending on how the barcode scanning application (not shown) is configured.

[0045] Referring now to FIG. **3**, in another exemplary embodiment of the inventive feature, the mobile barcode scanning device **10** includes a front-facing camera **16** and image processing software (not shown in the Figure.) The front-facing camera **16** and the image processing software cooperate to allow the mobile barcode scanning device **10** to have eye-tracking capability as is known in the art for smart mobile devices. The user (not shown) can reposition the graphical window **20** with eye movement. The user's eye **40**A in a first orientation looks at the graphical window **20** at a first position **20**A. Subsequently, the user focuses his eye **40**B to a second position on the viewfinder **19** where the user wants to relocate the graphical window **20** from the initial position **20**A to at a second position **20**B. In FIG. **3**, the user moves the graphical window **20** from the center of the viewfinder **19** from a first position **20**A, where the graphical window **20** encompasses barcode **22** and a portion of barcode **23**, to a second position **20**B on the right side of the viewfinder **19**, effectively moving the graphical window **20** so that barcode **22** is no longer in the graphical window **20** and that the barcode **23** is fully encompassed in the graphical window **20**. In this way, the graphical window **20** can be relocated on the viewfinder **19** in real-time by eye-tracking capability of the mobile barcode scanning device **10**.

[0046] In another aspect, the present invention embraces a process of scanning a barcode with a mobile barcode scanning device with a real-time, user-defined adjustable window.

[0047] In an exemplary embodiment, depicted as a flowchart in FIG. **4**, a process **30** of scanning a barcode with a mobile device is provided. An exemplary mobile device used in the process has been described and illustrated in FIGS. **1-3**, specifically with the feature of the user-defined graphical window in which a barcode to be scanned and decoded must be at least partially encompassed when the barcode scanning application begins scanning. The graphical window is adjustable in size, orientation, and position by a two-point touch gesture of a user of the mobile device. The process **30** includes the following steps: initializing the barcode scanning application **31**; displaying the camera viewfinder on the visual display **32**; superimposing the user-defined graphical window in the viewfinder **33**; defining in real-time the size, orientation, and location of the graphical window in the viewfinder through a two-point touch gesture of the user to at least partially encompass a barcode to be scanned and decoded in the viewfinder **34**; and decoding any barcode within the graphical window **35**.

[0048] The defining step **34** is accomplished by resizing, reorienting, and relocating the graphical window with a two-point touch gesture **36**. The two-point touch gesture can resize, reorient, and relocate the graphical window to a size, orientation, and location of the two points in real-time, whereby the barcode to be scanned and decoded can be defined in the adjustable graphical window by the user in real-time. The two-point touch gesture can be a pinch gesture with two fingers, a multi-touch gesture, or a two-point gesture with a stylus.

[0049] The defining step **34** can be accomplished, at least in part, by an eye-tracking capability of the mobile device. The eye-tracking capability is provided through the cooperation of a front-facing camera and image processing software. Relocating the graphical window may be accomplished by the eye tracking capability of the mobile device as described previously with respect to FIG. **3**.

[0050] The initializing step **31** may be accomplished by a physical act of the user, such as a voice command, a swiping motion of a stylus on the visual display, a touch gesture on the visual display, a physical motion of the mobile barcode scanning device, or a combination thereof.

[0051] Alternatively, the barcode scanning application may be provided with application logic. The application logic performs required data processing of the barcode scanning application. For example, the initializing step **31** may be accomplished by the application logic.

[0052] To supplement the present disclosure, this application incorporates entirely by reference the following patents, patent application publications, and patent applications:

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[0100] U.S. patent application Ser. No. 14/635,346 for SYSTEM AND METHOD FOR RELIABLE STORE-AND-FORWARD DATA HANDLING BY ENCODED INFORMATION READING TERMINALS filed Mar. 2, 2015 (Sevier);

[0101] U.S. Patent Application No. 29/519,017 for SCANNER filed Mar. 2, 2015 (Zhou et al.);

[0102] U.S. patent application Ser. No. 14/405,278 for DESIGN PATTERN FOR SECURE STORE filed Mar. 9, 2015 (Zhu et al.);

[0103] U.S. patent application Ser. No. 14/660,970 for DECODABLE INDICIA READING TERMINAL WITH COMBINED ILLUMINATION filed Mar. 18, 2015 (Kearney et al.);

[0104] U.S. patent application Ser. No. 14/661,013 for REPROGRAMMING SYSTEM AND METHOD FOR DEVICES INCLUDING PROGRAMMING SYMBOL filed Mar. 18, 2015 (Soule et al.);

[0105] U.S. patent application Ser. No. 14/662,922 for MULTIFUNCTION POINT OF SALE SYSTEM filed Mar. 19, 2015 (Van Horn et al.);

[0106] U.S. patent application Ser. No. 14/663,638 for VEHICLE MOUNT COMPUTER WITH CONFIGURABLE IGNITION SWITCH BEHAVIOR filed Mar. 20, 2015 (Davis et al.);

[0107] U.S. patent application Ser. No. 14/664,063 for METHOD AND APPLICATION FOR SCANNING A BARCODE WITH A SMART DEVICE WHILE CONTINUOUSLY RUNNING AND DISPLAYING AN APPLICATION ON THE SMART DEVICE DISPLAY filed Mar. 20, 2015 (Todeschini);

[0108] U.S. patent application Ser. No. 14/669,280 for TRANSFORMING COMPONENTS OF A WEB PAGE TO VOICE PROMPTS filed Mar. 26, 2015 (Funyak et al.);

[0109] U.S. patent application Ser. No. 14/674,329 for AIMER FOR BARCODE SCANNING filed Mar. 31, 2015 (Bidwell);

[0110] U.S. patent application Ser. No. 14/676,109 for INDICIA READER filed Apr. 1, 2015 (Huck);

[0111] U.S. patent application Ser. No. 14/676,327 for DEVICE MANAGEMENT PROXY FOR SECURE DEVICES filed Apr. 1, 2015 (Yeakley et al.);

[0112] U.S. patent application Ser. No. 14/676,898 for NAVIGATION SYSTEM CONFIGURED TO INTEGRATE MOTION SENSING DEVICE INPUTS filed Apr. 2, 2015 (Showering);

[0113] U.S. patent application Ser. No. 14/679,275 for DIMENSIONING SYSTEM CALIBRATION SYSTEMS AND METHODS filed Apr. 6, 2015 (Laffargue et al.);

[0114] U.S. Patent Application No. 29/523,098 for HANDLE FOR A TABLET COMPUTER filed Apr. 7, 2015 (Bidwell et al.);

[0115] U.S. patent application Ser. No. 14/682,615 for SYSTEM AND METHOD FOR POWER MANAGEMENT OF MOBILE DEVICES filed Apr. 9, 2015 (Murawski et al.);

[0116] U.S. patent application Ser. No. 14/686,822 for MULTIPLE PLATFORM SUPPORT SYSTEM AND METHOD filed Apr. 15, 2015 (Qu et al.);

[0117] U.S. patent application Ser. No. 14/687,289 for SYSTEM FOR COMMUNICATION VIA A PERIPHERAL HUB filed Apr. 15, 2015 (Kohtz et al.);

[0118] U.S. Patent Application No. 29/524,186 for SCANNER filed Apr. 17, 2015 (Zhou et al.);

[0119] U.S. patent application Ser. No. 14/695,364 for MEDICATION MANAGEMENT SYSTEM filed Apr. 24, 2015 (Sewell et al.);

[0120] U.S. patent application Ser. No. 14/695,923 for SECURE UNATTENDED NETWORK AUTHENTICATION filed Apr. 24, 2015 (Kubler et al.);

[0121] U.S. Patent Application No. 29/525,068 for TABLET COMPUTER WITH REMOVABLE SCANNING DEVICE filed Apr. 27, 2015 (Schulte et al.);

[0122] U.S. patent application Ser. No. 14/699,436 for SYMBOL READING SYSTEM HAVING PREDICTIVE DIAGNOSTICS filed Apr. 29, 2015 (Nahill et al.);

[0123] U.S. patent application Ser. No. 14/702,110 for SYSTEM AND METHOD FOR REGULATING BARCODE DATA INJECTION INTO A RUNNING APPLICATION ON A SMART DEVICE filed May 1, 2015 (Todeschini et al.);

[0124] U.S. patent application Ser. No. 14/702,979 for TRACKING BATTERY CONDITIONS filed May 4, 2015 (Young et al.);

[0125] U.S. patent application Ser. No. 14/704,050 for INTERMEDIATE LINEAR POSITIONING filed May 5, 2015 (Charpentier et al.);

[0126] U.S. patent application Ser. No. 14/705,012 for HANDS-FREE HUMAN MACHINE INTERFACE RESPONSIVE TO A DRIVER OF A VEHICLE filed May 6, 2015 (Fitch et al.);

[0127] U.S. patent application Ser. No. 14/705,407 for METHOD AND SYSTEM TO PROTECT SOFTWARE-BASED NETWORK-CONNECTED DEVICES FROM ADVANCED PERSISTENT THREAT filed May 6, 2015 (Hussey et al.);

[0128] U.S. patent application Ser. No. 14/707,037 for SYSTEM AND METHOD FOR DISPLAY OF INFORMATION USING A VEHICLE-MOUNT COMPUTER filed May 8, 2015 (Chamberlin);

[0129] U.S. patent application Ser. No. 14/707,123 for APPLICATION INDEPENDENT DEX/UCS INTERFACE filed May 8, 2015 (Pape);

[0130] U.S. patent application Ser. No. 14/707,492 for METHOD AND APPARATUS FOR READING OPTICAL INDICIA USING A PLURALITY OF DATA SOURCES filed May 8, 2015 (Smith et al.);

[0131] U.S. patent application Ser. No. 14/710,666 for PRE-PAID USAGE SYSTEM FOR ENCODED INFORMATION READING TERMINALS filed May 13, 2015 (Smith);

[0132] U.S. Patent Application No. 29/526,918 for CHARGING BASE filed May 14, 2015 (Fitch et al.);

[0133] U.S. patent application Ser. No. 14/715,672 for AUGUMENTED REALITY ENABLED HAZARD DISPLAY filed May 19, 2015 (Venkatesha et al.);

[0134] U.S. patent application Ser. No. 14/715,916 for EVALUATING IMAGE VALUES filed May 19, 2015 (Ackley);

[0135] U.S. patent application Ser. No. 14/722,608 for INTERACTIVE USER INTERFACE FOR CAPTURING A DOCUMENT IN AN IMAGE SIGNAL filed May 27, 2015 (Showering et al.);

[0136] U.S. Patent Application No. 29/528,165 for IN-COUNTER BARCODE SCANNER filed May 27, 2015 (Oberpriller et al.);

[0137] U.S. patent application Ser. No. 14/724,134 for ELECTRONIC DEVICE WITH WIRELESS PATH SELECTION CAPABILITY filed May 28, 2015 (Wang et al.);

[0138] U.S. patent application Ser. No. 14/724,849 for METHOD OF PROGRAMMING THE DEFAULT CABLE INTERFACE SOFTWARE IN AN INDICIA READING DEVICE filed May 29, 2015 (Barten);

[0139] U.S. patent application Ser. No. 14/724,908 for IMAGING APPARATUS HAVING IMAGING ASSEMBLY filed May 29, 2015 (Barber et al.);

[0140] U.S. patent application Ser. No. 14/725,352 for APPARATUS AND METHODS FOR MONITORING ONE OR MORE PORTABLE DATA TERMINALS (Caballero et al.);

[0141] U.S. Patent Application No. 29/528,590 for ELECTRONIC DEVICE filed May 29, 2015 (Fitch et al.);

[0142] U.S. Patent Application No. 29/528,890 for MOBILE COMPUTER HOUSING filed Jun. 2, 2015 (Fitch et al.);

[0143] U.S. patent application Ser. No. 14/728,397 for DEVICE MANAGEMENT USING VIRTUAL INTERFACES CROSS-REFERENCE TO RELATED APPLICATIONS filed Jun. 2, 2015 (Caballero);

[0144] U.S. patent application Ser. No. 14/732,870 for DATA COLLECTION MODULE AND SYSTEM filed Jun. 8, 2015 (Powilleit);

[0145] U.S. Patent Application No. 29/529,441 for INDICIA READING DEVICE filed Jun. 8, 2015 (Zhou et al.);

[0146] U.S. patent application Ser. No. 14/735,717 for INDICIA-READING SYSTEMS HAVING AN INTERFACE WITH A USER'S NERVOUS SYSTEM filed Jun. 10, 2015 (Todeschini);

[0147] U.S. patent application Ser. No. 14/738,038 for METHOD OF AND SYSTEM FOR DETECTING OBJECT WEIGHING INTERFERENCES filed Jun. 12, 2015 (Amundsen et al.);

[0148] U.S. patent application Ser. No. 14/740,320 for TACTILE SWITCH FOR A MOBILE ELECTRONIC DEVICE filed Jun. 16, 2015 (Bandringa);

[0149] U.S. patent application Ser. No. 14/740,373 for CALIBRATING A VOLUME DIMENSIONER filed Jun. 16, 2015 (Ackley et al.);

[0150] U.S. patent application Ser. No. 14/742,818 for INDICIA READING SYSTEM EMPLOYING DIGITAL GAIN CONTROL filed Jun. 18, 2015 (Xian et al.);

[0151] U.S. patent application Ser. No. 14/743,257 for WIRELESS MESH POINT PORTABLE DATA TERMINAL filed Jun. 18, 2015 (Wang et al.);

[0152] U.S. Patent Application No. 29/530,600 for CYCLONE filed Jun. 18, 2015 (Vargo et al);

[0153] U.S. patent application Ser. No. 14/744,633 for IMAGING APPARATUS COMPRISING IMAGE SENSOR ARRAY HAVING SHARED GLOBAL SHUTTER CIRCUITRY filed Jun. 19, 2015 (Wang);

[0154] U.S. patent application Ser. No. 14/744,836 for CLOUD-BASED SYSTEM FOR READING OF DECODABLE INDICIA filed Jun. 19, 2015 (Todeschini et al.);

[0155] U.S. patent application Ser. No. 14/745,006 for SELECTIVE OUTPUT OF DECODED MESSAGE DATA filed Jun. 19, 2015 (Todeschini et al.);

[0156] U.S. patent application Ser. No. 14/747,197 for OPTICAL PATTERN PROJECTOR filed Jun. 23, 2015 (Thuries et al.);

[0157] U.S. patent application Ser. No. 14/747,490 for DUAL-PROJECTOR THREE-DIMENSIONAL SCANNER filed Jun. 23, 2015 (Jovanovski et al.); and

[0158] U.S. patent application Ser. No. 14/748,446 for CORDLESS INDICIA READER WITH A MULTIFUNCTION COIL FOR WIRELESS CHARGING AND EAS DEACTIVATION, filed Jun. 24, 2015 (Xie et al.).

[0159] In the specification and/or figures, typical embodiments of the invention have been disclosed. The present invention is not limited to such exemplary embodiments. The use of the term "and/or" includes any and all combinations of one or more of the associated listed items. The figures are schematic representations and so are not necessarily drawn to scale. Unless otherwise noted, specific terms have been used in a generic and descriptive sense and not for purposes of limitation.

1. A feature on a mobile barcode scanning device, wherein:

the mobile bar code scanning device is provided with (i) an embedded camera, (ii) a user interface system, the user interface system being provided with a visual display, the user interface system being configured to allow the user to access features of the mobile barcode scanning device with touch gestures on the visual display, (iii) a barcode scanning application, the barcode scanning application being initialized by an act of a user of the mobile barcode scanning device, and (iv) an operating system, the operating system communicatively coupled to the embedded camera, the barcode scanning application, and the user interface system, and wherein the visual display provides a viewfinder for the embedded camera in the barcode scanning application; and

the feature comprises a user-defined graphical window overlaid on the viewfinder, the user-defined graphical window being adjustable in size, orientation, and position by at least a two-point touch gesture on the visual display by the user of the mobile barcode scanning device, the two-point touch gesture being capable of resizing, reorienting, and relocating the graphical window to a size, orientation, and location of the two points in real-time such that the barcode to be scanned can be defined in the adjustable graphical window by the user in real-time.

2. The feature of claim **1**, wherein the two-point touch gesture on the visual display is a pinch gesture with two fingers of the user.

3. The feature of claim **1**, wherein the two-point touch gesture is a touch gesture with a pair of styli.

4. The feature of claim **1**, wherein the two-point touch gesture is a multi-touch gesture.

5. The feature of claim **1**, wherein the mobile device comprises a front-facing camera and image processing software, the operating system is communicatively coupled to the front-facing camera and the image processing software, and the graphical window can be repositioned by an eye-tracking

capability of the mobile device, the eye-tracking capability being carried out by a cooperation between the front-facing camera and image processing software.

6. The feature of claim **1**, wherein the mobile barcode scanning device is a smartphone.

7. The feature of claim **1**, wherein the mobile barcode scanning device is a smartwatch.

8. The feature of claim **1**, wherein the mobile device is a tablet computer.

9. The feature of claim **1**, wherein the act of the user to initialize the barcode scanning operation includes a voice command, a swiping motion of a stylus on the visual display, a touch gesture on the visual display, and/or a physical motion of the mobile barcode scanning device.

10. The feature of claim **1**, wherein the barcode scanning application is configured so that a barcode can be successfully decoded if the barcode is partially encompassed by the graphical window.

11. The feature of claim **1**, wherein the barcode scanning application is configured so that a barcode can be successfully decoded if the barcode is fully encompassed by the graphical window.

12. A process of scanning a barcode with a mobile device, comprising:

providing a mobile device having (i) an embedded camera, (ii) a user interface system, the user interface system being provided with a visual display, the user interface system being configured to allow the user to access features of the mobile device with touch gestures on the visual display, (iii) a barcode scanning application, and (iv) an operating system, the operating system communicatively coupled to the embedded camera, the barcode scanning application, and the user interface system, wherein the visual display provides a viewfinder for the embedded camera, wherein the viewfinder provides a user-defined graphical window in which a barcode to be scanned and decoded successfully must be at least partially encompassed when the barcode scanning application begins scanning, and wherein the graphical window is adjustable in size, orientation, and position by a two-point touch gesture of a user of the mobile device;

initializing the barcode scanning application;

displaying the camera viewfinder on the visual display;

superimposing the user-defined graphical window in the viewfinder;

defining in real-time the size, orientation, and location of the graphical window in the viewfinder through a two-point touch gesture of the user to at least partially encompass a barcode to be scanned and decoded in the viewfinder; and

decoding any barcode within the graphical window.

13. The process of claim **12**, wherein the defining step is accomplished by resizing, reorienting, and relocating the graphical window in real-time by a two-point touch gesture to a size, orientation, and location of the two points, such that the barcode to be scanned can be defined in the adjustable graphical window by the user in real-time.

14. The process of claim **13**, wherein the two-point touch gesture is a two-finger pinch gesture.

15. The process of claim **12**, wherein the defining step is accomplished at least in part by an eye-tracking capability of the mobile device that comprises a front-facing camera and image processing software, wherein the operating system is communicatively coupled to the front-facing camera and the image processing software, and wherein the eye-tracking capability is carried out by a cooperation between the front-facing camera and image processing software.

16. The process of claim **15**, wherein the defining step is accomplished by relocating the graphical window via the eye-tracking capability of the mobile device.

17. The process of claim **12**, wherein the barcode scanning application is configured so that a barcode to be scanned and successfully decoded must be fully encompassed in the graphical window in the viewfinder.

18. The process of claim **12**, wherein the mobile barcode scanning device is a smartphone, a smartwatch, or a tablet computer.

19. The process of claim **12**, wherein the initializing step is accomplished by a physical act of the user comprising a voice command, a swiping motion of a stylus on the visual display, a touch gesture on the visual display, or a physical motion of the mobile barcode scanning device.

20. The process of claim **12**, wherein the barcode scanning application is provided with application logic, the application logic performing required data processing of the barcode scanning application, and wherein the initializing step is accomplished by the application logic.

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