



US010385492B2

(12) **United States Patent**
Schwarzberger

(10) **Patent No.:** **US 10,385,492 B2**

(45) **Date of Patent:** **Aug. 20, 2019**

(54) **METHOD, APPARATUS, AND
COMPUTER-READABLE MEDIUM FOR
VIEWING**

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(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **14/707,458**

(22) Filed: **May 8, 2015**

(65) **Prior Publication Data**

US 2016/0326677 A1 Nov. 10, 2016

(51) **Int. Cl.**
D05B 19/10 (2006.01)
D05B 19/12 (2006.01)
D05B 11/00 (2006.01)

(52) **U.S. Cl.**
CPC **D05B 19/10** (2013.01); **D05B 11/00**
(2013.01); **D05B 19/12** (2013.01)

(58) **Field of Classification Search**
CPC D05B 19/02; D05B 19/04; D05B 19/06;
D05B 19/08; D05B 19/10; D05B 19/12;
D05B 11/00

See application file for complete search history.

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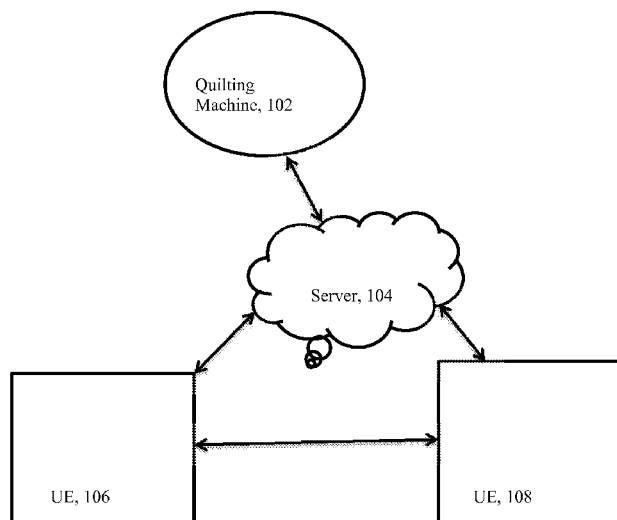
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(57) **ABSTRACT**

Presented are a method, apparatus, and computer-readable medium for viewing. An exemplary method includes capturing, by a user equipment (UE), an image of a work piece, and accessing, by the UE, a plurality of predetermined patterns, wherein the accessing includes receiving the plurality of predetermined patterns from a quilting machine. The method further includes combining, by the UE, the captured image with one of the plurality of predetermined patterns, wherein the one of the plurality of predetermined patterns overlays the captured image.

8 Claims, 5 Drawing Sheets



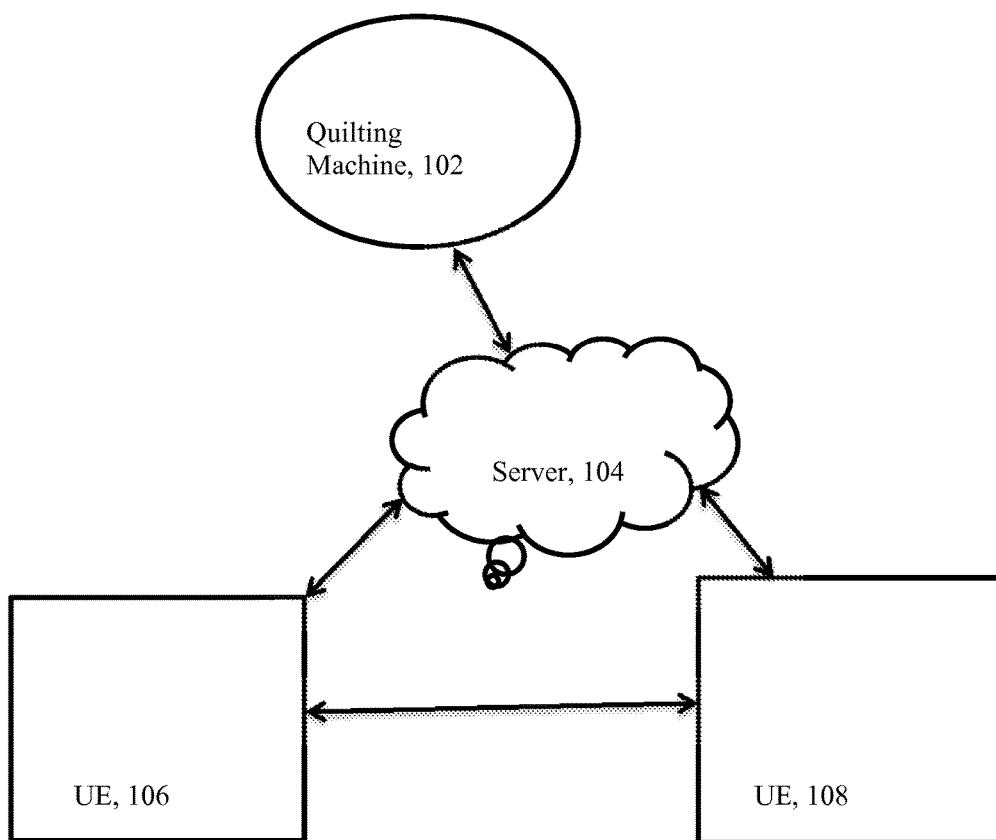


FIG. 1

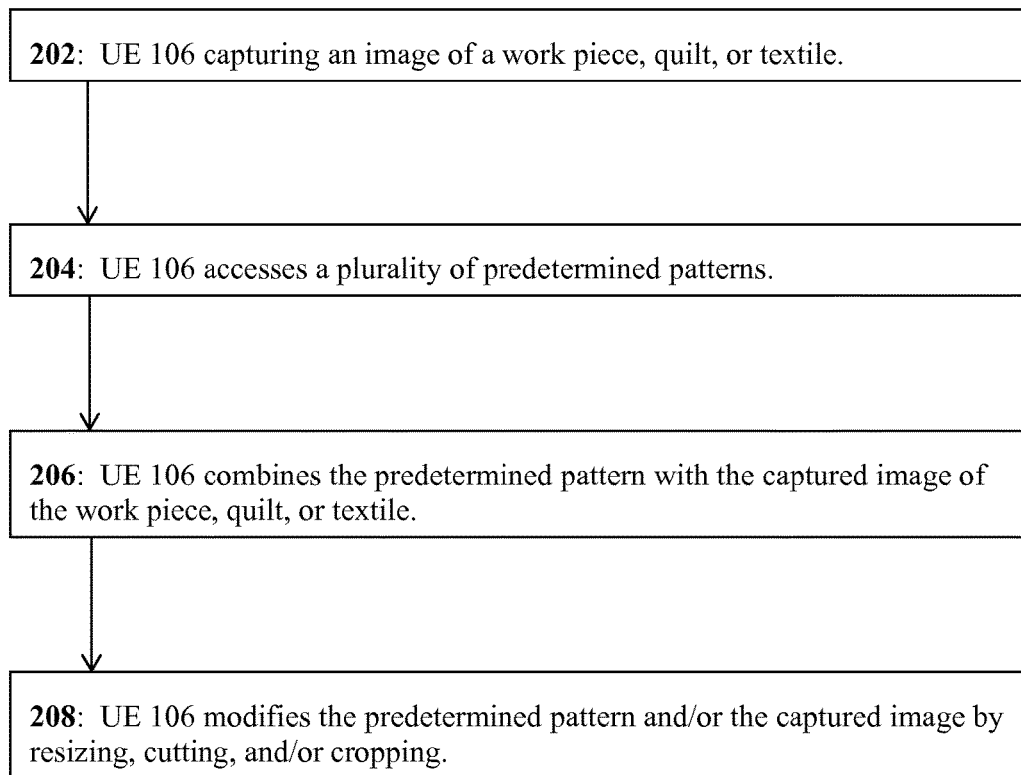
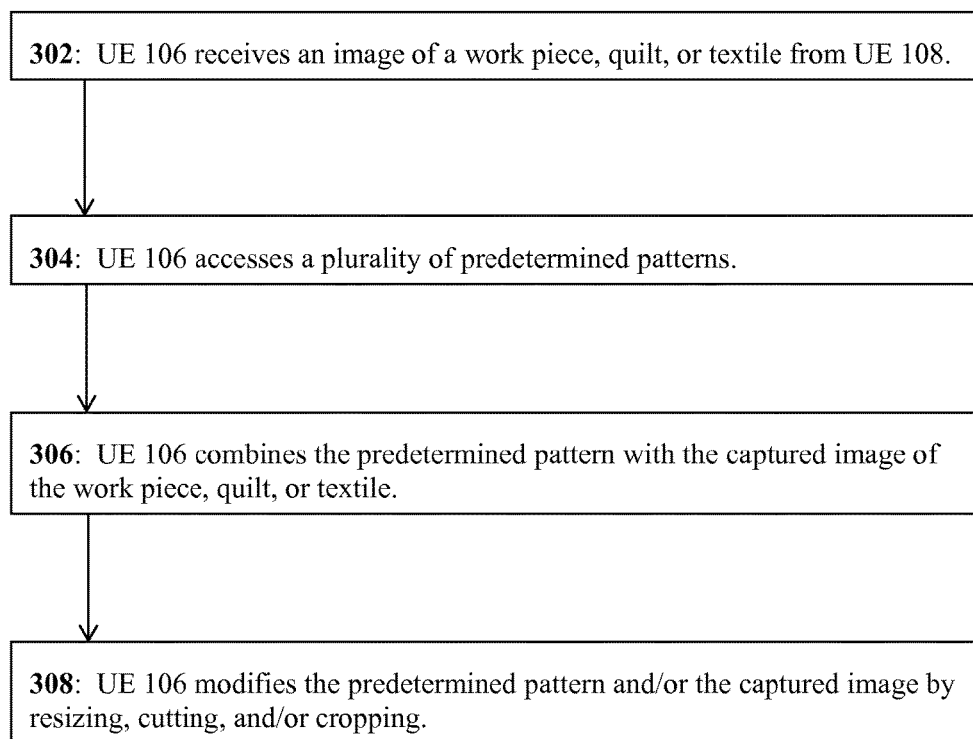


FIG. 2

**FIG. 3**

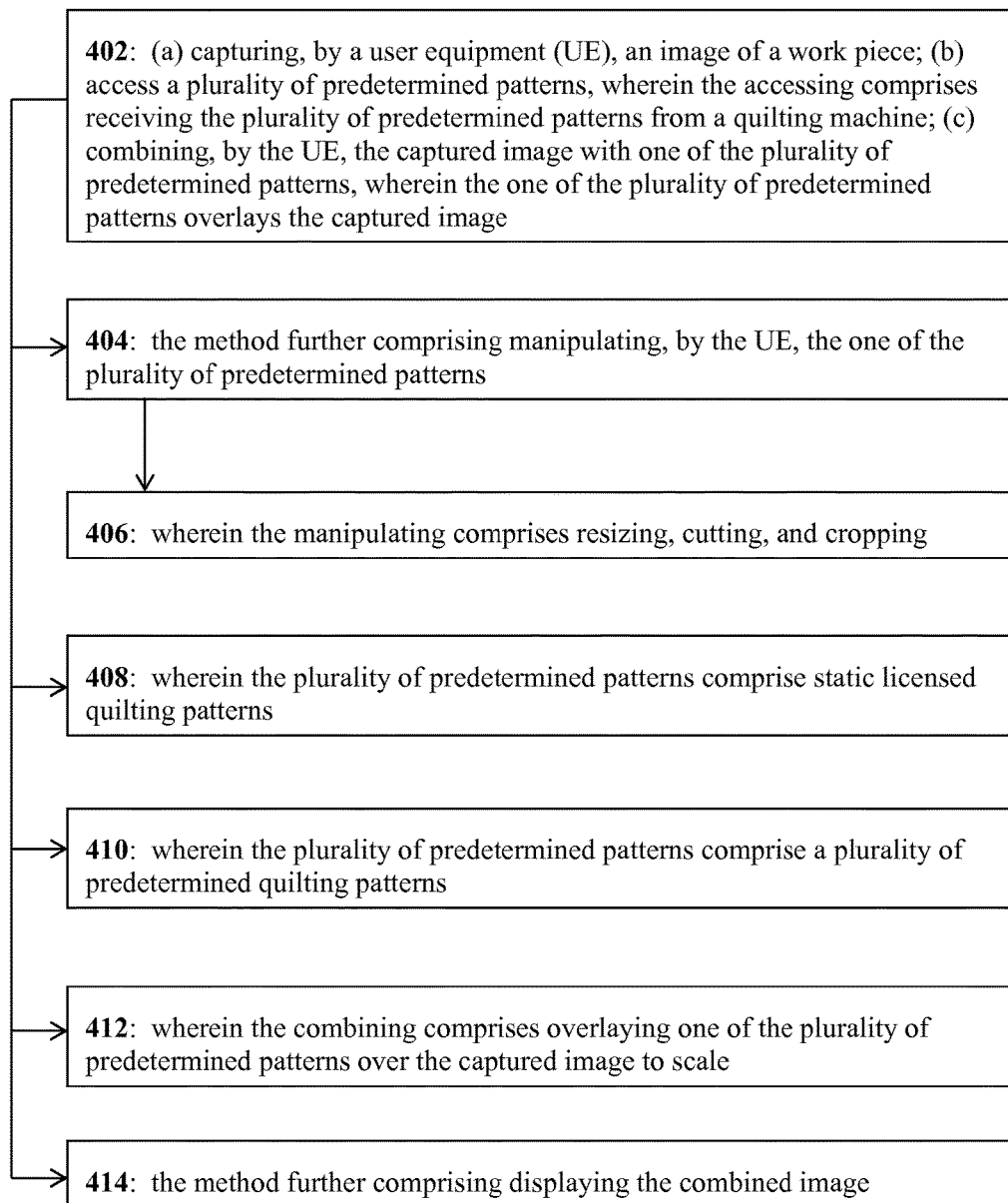


FIG. 4

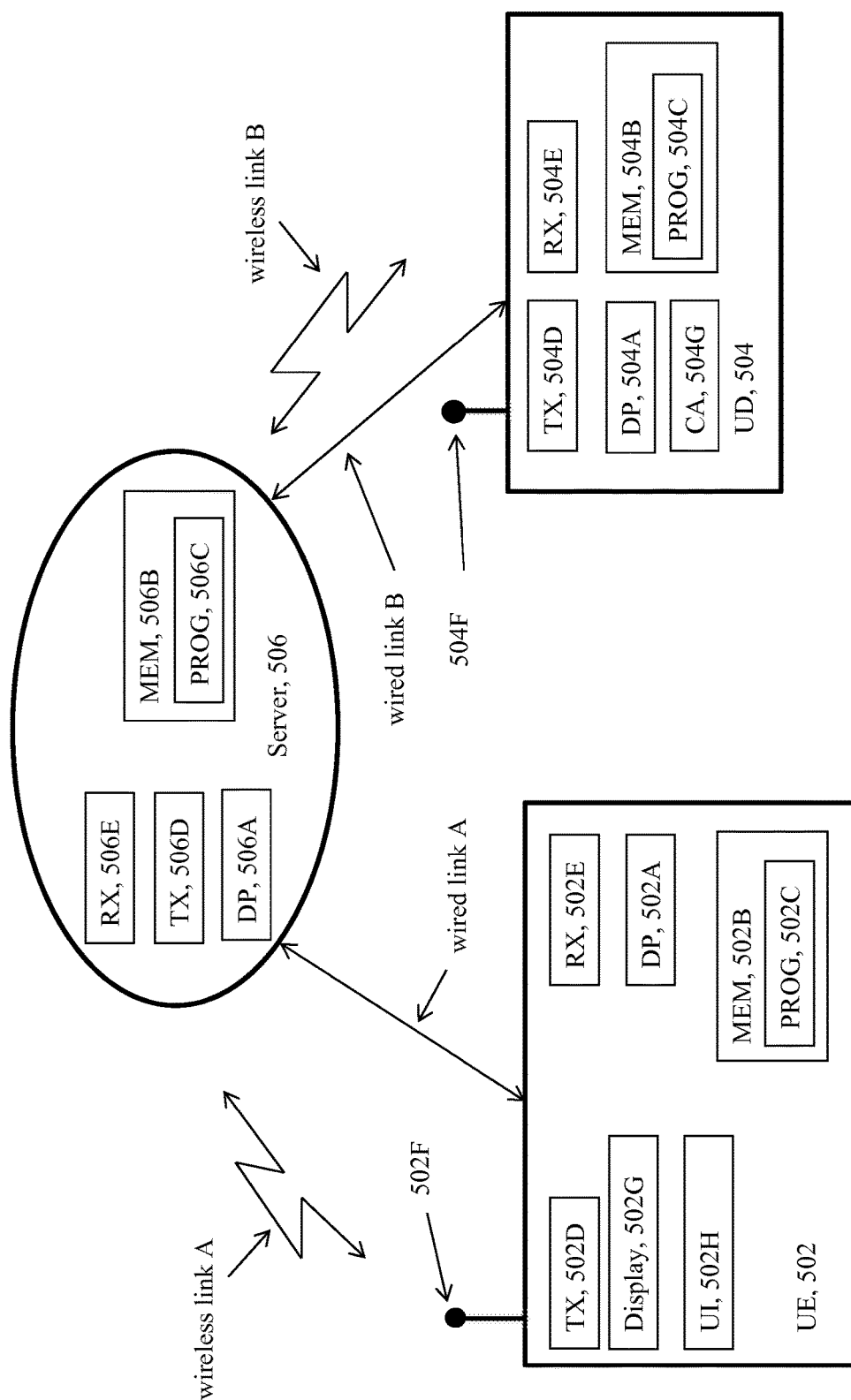


FIG. 5

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METHOD, APPARATUS, AND COMPUTER-READABLE MEDIUM FOR VIEWING

BACKGROUND OF THE DISCLOSURE

Field of the Invention

Exemplary embodiments of the present disclosure relate to a method, apparatus, and computer-readable medium for viewing a design. Exemplary embodiments of the present disclosure relate more particularly to a method, apparatus, and computer-readable medium for viewing a quilting design.

Description of Related Art

Digital imaging is the creation of digital images, typically from a physical scene. The term is often assumed to imply or include the processing, compression, storage, printing, and display of such images. The most common method is by digital photography with a digital camera, but other methods are also available.

A digital photograph may be created directly from a physical scene by a camera or similar device. Alternatively, a digital image may be obtained from another image in an analog medium, such as photographs, photographic film, or printed paper, by an image scanner or similar device. Many technical images—such as those acquired with tomographic equipment, side-scan sonar, or radio telescopes—are actually obtained by complex processing of non-image data. Finally, a digital image can also be computed from a geometric model or mathematical formula.

There are several benefits of digital imaging. First, the process enables easy access to photographs, images, designs, and documents. Second, digital imaging creates the possibility of reconstructing the visual contents of partially damaged photographs, thus eliminating the potential that the original would be modified or destroyed. Another advantage to digital photography is that it has been expanded to camera phones. Individuals are able to take cameras with them wherever as well as send photos instantly to others.

Image editing encompasses the process of altering images, whether they are digital photographs, traditional photochemical photographs, or illustrations. Traditional analog image editing is known as photo retouching, using tools such as an airbrush to modify photographs, or editing illustrations with any traditional art medium. Graphic software programs, which can be broadly grouped into vector graphics editors, raster graphic editors, and 3D modelers, are the primary tools with which a user may manipulate, enhance, and transform images. Many image editing programs are also used to render or create computer art from scratch.

BRIEF SUMMARY OF THE DISCLOSURE

In view of the foregoing, it is an object of the present disclosure to provide a method, apparatus, and computer-readable medium for viewing.

A first exemplary embodiment of the present disclosure provides a method of viewing. The method includes capturing, by a user equipment (UE), an image of a work piece, and accessing, by the UE, a plurality of predetermined patterns, wherein the accessing comprises receiving the plurality of predetermined patterns from a quilting machine. The method further includes combining, by the UE, the captured image with one of the plurality of predetermined patterns, wherein the one of the plurality of predetermined patterns overlays the captured image.

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A second exemplary embodiment of the present disclosure provides an apparatus for viewing. The apparatus includes at least one processor and a memory storing computer instructions executable by the at least one processor, wherein the memory with the computer instructions and the at least one processor are configured to cause the apparatus to at least capture an image of a work piece. The memory with the computer instructions and the processor are configured to further cause the apparatus to access a plurality of predetermined patterns, wherein the accessing comprises receiving the plurality of predetermined patterns from a quilting machine, and combine the captured image with one of the plurality of predetermined patterns, wherein the one of the plurality of predetermined patterns overlays the captured image.

A third exemplary embodiment of the present disclosure provides a computer-readable medium tangibly storing computer program instructions which when executed by a processor, cause the processor to at least capture an image of a work piece. The computer program instructions further cause the processor to access a plurality of predetermined patterns, wherein the accessing comprises receiving the plurality of predetermined patterns from a quilting machine, and combine the captured image with one of the plurality of predetermined patterns, wherein the one of the plurality of predetermined patterns overlays the captured image.

A fourth exemplary embodiment of the present disclosure provides a method for viewing. The method includes capturing, by a user equipment (UE), an image of a work piece, and accessing, by the UE, a plurality of predetermined patterns, wherein the plurality of predetermined patterns include licensed static quilting patterns. The method further includes combining, by the UE, the captured image with one of the plurality of predetermined patterns, wherein the one of the plurality of predetermined patterns overlays the captured image.

A fifth exemplary embodiment of the present disclosure provides an apparatus for viewing. The apparatus includes at least one processor and a memory storing computer instructions executable by the at least one processor, wherein the memory with the computer instructions and the at least one processor are configured to cause the apparatus to at least capture an image of a work piece. The memory with the computer instructions and the processor are configured to further cause the apparatus to access a plurality of predetermined patterns, wherein the plurality of predetermined patterns include licensed static quilting patterns, and combine the captured image with one of the plurality of predetermined patterns, wherein the one of the plurality of predetermined patterns overlays the captured image.

A sixth exemplary embodiment of the present disclosure provides a computer-readable medium tangibly storing computer program instructions which when executed by a processor, cause the processor to at least capture an image of a work piece. The computer program instructions further cause the processor to access a plurality of predetermined patterns, wherein the plurality of predetermined patterns include licensed static quilting patterns, and combine the captured image with one of the plurality of predetermined patterns, wherein the one of the plurality of predetermined patterns overlays the captured image.

The following will describe embodiments of the present disclosure, but it should be appreciated that the present disclosure is not limited to the described embodiments and various modifications of the invention are possible without

departing from the basic principles. The scope of the present disclosure is therefore to be determined solely by the appended claims.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

FIG. 1 presents a simplified signaling diagram between devices suitable for use in practicing exemplary embodiments of this disclosure.

FIG. 2 presents a simplified logic flow diagram in accordance with an alternative method, apparatus, and computer-readable medium for performing exemplary embodiments of this disclosure.

FIG. 3 presents a simplified logic flow diagram in accordance with another method, apparatus, and computer-readable medium for performing exemplary embodiments of this disclosure.

FIG. 4 presents a logic flow diagram in accordance with a method, apparatus, and computer-readable medium for performing exemplary embodiments of this disclosure.

FIG. 5 presents a simplified block diagram of the devices suitable for use in practicing exemplary embodiments of this disclosure.

DETAILED DESCRIPTION OF THE DISCLOSURE

When designing a quilt or a pattern on a quilt, a user or designer often plans and designs the quilt prior to stitching. The planning can include deciding which patterns to add to the quilt in question and the placement of the specific patterns. However, it is often unclear what the final product will look like after stitching of the quilt or work piece is complete.

Additionally, many quilting patterns for machine quilting cannot be viewed in their native state on a quilt prior to purchase by a consumer. The user/designer/consumer often is unable to view or “know” how a given pattern will appear on a given quilt until after the pattern has been purchased or even only after the pattern has been applied to the quilt or work piece. Accordingly, there is a need for a way for users of quilting machines to be able to more easily plan and design quilts or work pieces.

Exemplary embodiments of the present disclosure provide a method, apparatus, and computer-readable medium for users to view a quilt or work piece with the addition of a predetermined pattern. Exemplary embodiments of the present disclosure further provide a method, apparatus, and computer-readable medium to view a selected quilt or work piece on a user equipment with the addition of one of a plurality of patterns, wherein the patterns are located or received from a server or other remote device.

Referring to FIG. 1, depicted is a simplified signaling diagram between devices suitable for use in practicing exemplary embodiments of this disclosure. Shown in FIG. 1 is quilting machine 102, server 104, user equipment (UE) 106, and user equipment (UE) 108.

Quilting machine 102 includes any type of quilting machine that is known in the art, which has the ability to stitch or embroider a work piece, quilt or textile, and also has the ability to communicate either through a wired or wireless connection with a server and/or other electronic devices. The term quilting machines 102 includes quilting machines for stitching together multiple layers, such as a filler layer between a top and a bottom textile layer, as well as an embroidery machine.

Exemplary embodiments of quilting machine 102 include a frame, which supports a textile retention area, a sewing machine with a sewing head and a reciprocating needle. Exemplary embodiments of quilting machine 102 further include a processor, a transmitter, a receiver, and a memory storing computer program instructions. In some exemplary embodiments, quilting machine 102, the processor, transmitter, receiver, and memory storing computer program instructions are not a portion of quilting machine 102 that is supported by the frame, but is a separate unit that is operably coupled to quilting machine 102. Exemplary embodiments of the computer program instructions are able to, when executed on the processor allow for quilting machine 102 to operably communicate with server 104, UE 106, and UE 108. Communication between quilting machine 102 and UE 106 and UE 108 can either be directly with UE 106 and UE 108, or indirectly through server 104. Exemplary embodiments of quilting machine 102 are able to operably maintain on its memory and transmit via its transmitter a plurality of quilting patterns to server 104 and/or UE 106.

Exemplary embodiments of server 104 include any type of server that is known in the art that is able to operably communicate with quilting machine 102, UE 106, and UE 108. Exemplary embodiments of server 104 include a processor, a transmitter, a receiver, and a memory including computer program instructions. Exemplary embodiments of server 104 include both local servers and cloud-based servers. Exemplary embodiments of server 104 further include a single server or multiple servers. Exemplary embodiments of server 104 include a memory that is operably able to store a plurality of images or patterns. In a further exemplary embodiment, the memory is able to store a plurality of images or patterns and a second plurality of images, such as images of quilts.

UE 106 includes any type of electronic device capable of operably communicating with server 104, UE 108, and quilting machine 102, and has the ability to capture and transmit images. Exemplary embodiments of UE 106 includes a user interface, a display, a transmitter, a receiver, a processor, and a memory including computer program instructions. Exemplary embodiments of UE 106 include desktop computers, laptop computers, mobile phones, smartphones, tablets, wearable electronic devices, personal electronic devices, and the like.

Exemplary embodiments of UE 106 are able to transmit via the transmitter and receive via the receiver communications and data from server 104, quilting machine 102, and UE 108 through either wired or wireless connections. Exemplary embodiments of UE 106 include any type of display known in the art including digital displays, which allows a user to view one or more images. Exemplary embodiments of the display are able to display or show one or multiple images simultaneously. In one exemplary embodiment UE 106 is able to display via the display multiple images on top of one another.

In another exemplary embodiment, UE 106 includes a camera or digital camera is operable to take digital photographs, store the digital photographs and display the digital photographs along with other images.

UE 108 includes any type of electronic device capable of operably communicating with server 104, UE 106, and quilting machine 102, and has the ability to display images. Exemplary embodiments of UE 108 include a user interface, a transmitter, a receiver, a processor, and a memory including computer program instructions. Exemplary embodiments of UE 108 include digital cameras, digital video cameras, desktop computers, laptop computers, mobile

phones, smartphones, tablets, wearable electronic devices, personal electronic devices, and the like.

Exemplary embodiments of UE 108 include a camera or digital camera that is operable to take digital photographs, store the digital photographs on the memory, and transmit the digital photographs to UE 106 either directly via wired or wireless communication or indirectly through server 104 through either wired or wirelessly communications.

In practice, exemplary embodiments of quilting machine 102 are able to store a plurality of quilting patterns in its memory. Quilting machine 102 is also operable to transmit the plurality of quilting patterns or a portion of the plurality of quilting patterns to server 104. Server 104 then stores the plurality of quilting patterns in its memory. Exemplary embodiments of quilting patterns include images of quilted patterns or images of representations of quilted patterns. For example, a quilting pattern may include a 2-dimensional depiction of lines that represent stitching for a particular pattern. In another example, a quilting pattern may include an image of actual stitching of a quilted pattern. Exemplary quilting patterns may further include static licensed quilting patterns. An exemplary static quilting pattern includes lines of a quilting pattern that cannot be altered by a user. A user may be able to crop, cut, or change the size of the quilting pattern, but the user cannot add stitching lines to, remove stitching lines from, or alter the stitching lines of the quilting pattern. An exemplary licensed quilting pattern includes a quilting pattern that has been purchased by a user, or the user otherwise has permission from the owner of the quilting pattern to use the quilting pattern and the user would not otherwise be able to use the quilting pattern without the license. An exemplary licensed quilting pattern includes quilting patterns that a user has purchased or licensed from a third party. It should be appreciated that exemplary embodiments of quilting machine 102 can also store a plurality of sewing, quilting, and/or stitching patterns.

Next, UE 106 accesses or requests access to the plurality of quilting patterns or one of the plurality of quilting patterns, or a portion of the plurality of quilting patterns from server 104. Server 104 then sends to UE 106 via wired or wireless communication the requested quilting patterns. In some exemplary embodiments server 104 only allows access and sends to UE 106 the requested quilting patterns upon authentication of the user of UE 106. Exemplary embodiments of user authentication include input of proper username and password or input of user biometric data such as a user's fingerprint.

UE 106 then either requests or receives from UE 108 a user specified image. For example, UE 106 may request or receive from UE 108 an image of a quilt, work piece, or textile the user desires to have quilted or stitched with a pattern. UE 106 then displays the received user specified image and the received quilting pattern by overlaying the quilting pattern on top of the user specified image such that the both the user specified image and the quilting pattern can be viewed by a user simultaneously.

Exemplary embodiments of UE 106 are further able to manipulate the received quilting patterns, which can include resizing, cutting, and cropping the quilting patterns.

It should be appreciated that while exemplary embodiments of the present disclosure relate to the creation and planning of quilts or work pieces, exemplary embodiments of the present disclosure can be applied more generally to stitching, sewing and the like.

Referring to FIG. 2, presented is a logic flow diagram in accordance with an alternative method, apparatus, and computer-readable medium for performing exemplary embodi-

ments of this disclosure. The process begins at block 202, which states UE 106 capturing an image of a work piece, quilt or textile. In this exemplary embodiment, UE 106 includes a camera, digital camera, or digital video camera capable of taking a photograph of a work piece, quilt or textile. The process proceeds to block 204, which indicates that UE 106 accesses a plurality of predetermined patterns. Exemplary embodiments of predetermined patterns include quilting patterns, sewing patterns, stitching patterns, and the like. The plurality of predetermined patterns can be accessed by UE 106 accessing server 104 or quilting machine 102.

Then at block 206, UE 106 combines the predetermined pattern with the captured image of the work piece, quilt, or textile by overlaying the predetermined pattern on the captured image of the work piece, quilt, or textile. Then at block 208, UE 106 modifies the predetermined pattern and/or the captured image by resizing, cutting, and/or cropping. In this embodiment, UE 106 is operable to modify the predetermined pattern and the captured image either individually or together. In other words, UE 106 can modify the predetermined pattern while it overlays the captured image without modifying the captured image, and UE 106 can modify the captured image without modifying the predetermined pattern. Conversely, UE 106 can also modify the captured image and the predetermined image simultaneously.

Reference is now made to FIG. 3, which depicts a logic flow diagram in accordance with another alternative method, apparatus, and computer-readable medium for performing exemplary embodiments of this disclosure. The process begins at block 302 wherein UE 106 receives an image of a work piece, quilt, or textile from UE 108. In another exemplary embodiment UE 106 receives an image of the work piece, quilt, or textile from quilting machine 102 or from server 104. Next at block 304, UE 106 accesses a plurality of predetermined patterns. The plurality of predetermined patterns can be located in quilting machine 102 or in server 104.

The process continues at block 306, wherein UE 106 combines the predetermined pattern with the captured image of the work piece, quilt, or textile. Then at block 308, UE 106 modifies the predetermined pattern and/or the captured image by resizing, cutting, and/or cropping.

Referring to FIG. 4, presented is a logic flow diagram in accordance with a method, apparatus, and computer-readable medium for performing exemplary embodiments of this disclosure. Block 402 presents (a) capturing, by a user equipment (UE), an image of a work piece; (b) access a plurality of predetermined patterns, wherein the accessing comprises receiving the plurality of predetermined patterns from a quilting machine; (c) combining, by the UE, the captured image with one of the plurality of predetermined patterns, wherein the one of the plurality of predetermined patterns overlays the captured image. Then block 404 specifies the method further comprising manipulating, by the UE, the one of the plurality of predetermined patterns.

Some of the non-limiting implementations detailed above are also summarized at FIG. 4 following block 404. Block 406 relates to wherein the manipulating comprises resizing, cutting, and cropping. Block 408 then specifies wherein the plurality of predetermined patterns comprise static licensed quilting patterns. Block 410 further specifies wherein the plurality of predetermined patterns comprise a plurality of predetermined quilting patterns. Block 412 then states wherein the combining comprises overlaying one of the plurality of predetermined patterns over the captured image to scale. Block 414 then further states the method further comprising displaying the combined image.

The logic diagram of FIG. 4 may be considered to illustrate the operation of a method, a result of execution of computer program instructions stored in a computer-readable medium. The logic diagram of FIG. 4 may also be considered a specific manner in which components of the device are configured to cause that device to operate, whether such a device is an electronic device, laptop, tablet, desktop, mobile phone, smartphone or other device, or one or more components thereof. The various blocks shown in FIG. 4 may also be considered as a plurality of coupled logic circuit elements constructed to carry out the associated function(s), or specific result of strings of computer program instructions or code stored in memory.

Various embodiments of the computer-readable medium include any data storage technology type which is suitable to the local technical environment, including but not limited to semiconductor based memory devices, magnetic memory devices and systems, optical memory devices and systems, fixed memory, removable memory, disc memory, flash memory, dynamic random-access memory (DRAM), static random-access memory (SRAM), electronically erasable programmable read-only memory (EEPROM) and the like. Various embodiments of the processor include but are not limited to general purpose computers, special purpose computers, microprocessors digital signal processors and multi-core processors.

Reference is now made to FIG. 5 for illustrating a simplified block diagram of the various electronic devices and apparatus that are suitable for use in practicing exemplary embodiments of the present disclosure. Shown in FIG. 5 is a user equipment (UE) 502, server 506, and user equipment (UE) 504. Server 506 is adapted for communication over wireless link A or wired link A with UE 502. Similarly, server 506 is adapted for communication over wireless link B or wired link B with UD 504. In other exemplary embodiments, server 506 can communicate with UE 502 and UD 504 through wired connections, wireless connections, or a combination of both. Exemplary embodiments of server 506 includes a single server or a plurality of servers.

UE 502 includes processing means such as a processing system and/or at least one data processor (DP) 502A, storing means such as at least one computer-readable medium or computer-readable memory (MEM) 502B storing at least one computer program (PROG) 502C, and also communicating means such as a transmitter (TX) 502D and receiver (RX) 502E for bidirectional wireless communications with server 506 and/or UD 504 and/or any other UE's (not shown) via one or more antennas 502F as known in the art. UE 502 further includes a display 502G for displaying one or more images. Exemplary embodiments of display 502G include those known in the art including digital displays, LCD, and LED displays. UE 504 also includes user interface UI 502H to allow a user to interact with and control the operation of UE 502 and displayed items on display 502G. In some exemplary embodiments, UE 502 includes a camera, digital camera or digital video camera 502I (not shown) operable to take digital photographs that can be stored in MEM 502B of UE 502.

Server 506 includes its own processing means such as a processing system and/or at least one data processor (DP) 506A, storing means such as at least one computer-readable memory (MEM) 506B storing at least one computer program (PROG) 506C, and communicating means such as a transmitter (TX) 506D and receiver (RX) 506E for bidirectional wireless communications with other devices as known in the art.

Similarly, UD 504 includes its own processing means such as a processing system and/or at least one data processor (DP) 504A, storing means such as at least one computer-readable memory (MEM) 504B storing at least one computer program (PROG) 504C, and communicating means such as a transmitter (TX) 504D and a receiver (RX) 504E for bidirectional wireless communications with other devices via one or more antennas 504F as known in the art. UD 504 also includes a camera, digital camera, or digital video camera (CA) 504G operable to take digital photographs that can be stored in MEM 504B of UE 504.

Various embodiments of UE 502 can include, but are not limited to: cellular telephones (or mobile phone) including smartphones, data cards, USB dongles, laptop computers, personal portable digital devices having wireless communication capabilities including but not limited to laptop/palm-top/tablet computers, digital cameras, music devices, and internet appliances.

Various embodiment of UD 504 can include, but are not limited to cellular telephones (or mobile phone) including smartphones, data cards, USB dongles, laptop computers, personal portable digital devices having wireless communication capabilities including but not limited to laptop/palm-top/tablet computers, digital cameras, music devices, quilting machines, sewing machines, stitching machines, and internet appliances.

At least one of the PROGs 502C or 504C in UE 502 or UD 504 is assumed to include program instructions that, when executed by the associated DP 502A, 504A, enable the device to operate in accordance with embodiments of the present disclosure, as detailed above. Server 506 may also have software stored in its MEM 506B to implement certain aspects of these teachings. In these regards, embodiments of this disclosure may be implemented at least in part by computer software stored on the MEM 502B, 504B, 506B which is executable by DP 502A or UE 502, DP 504A of UD 504, and/or DP 506 or server 506, or by hardware, or by a combination of tangibly stored software and hardware (and tangibly stored firmware). Electronic devices implementing these aspects of the disclosure need not be the entire devices as depicted in FIG. 5, but embodiments may be implemented by one or more components of same such as the above described tangibly stored software, hardware, firmware and DP, or a system on a chip SOC, an application specific integrated circuit ASIC or a digital signal processor DSP.

Various embodiment of the computer readable MEMs 502B, 504B, and 506B include any data storage technology type which is suitable to the local technical environment, including but not limited to semiconductor based memory devices, magnetic memory devices and systems, optical memory devices and systems, fixed memory, removable memory, disc memory, flash memory, DRAM, SRAM, EEPROM and the like. Various embodiments of the DPs 502A, 504A, and 506A include but are not limited to general purpose computers, special purpose computers, microprocessors, digital signal processors (DSPs) and multi-core processors.

This disclosure has been described in detail with particular reference to a presently preferred embodiment, but it will be understood that variations and modifications can be effected within the spirit and scope of the invention. The presently disclosed embodiments are therefore considered in all respects to be illustrative and restrictive. The scope of the invention is indicated by the appended claims, and all changes that come within the meaning and range of equivalents thereof are intended to be embraced therein.

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The invention claimed is:

1. A method of viewing, the method comprising:

(a) transmitting, by a quilting machine, a plurality of predetermined patterns to a server;

(b) capturing, by a user equipment, an image of a work piece;

(c) accessing, by the user equipment, the plurality of predetermined patterns on the server, wherein the accessing comprises receiving the plurality of predetermined patterns from the server; and

(d) combining, by the user equipment, the captured image with one of the plurality of predetermined patterns, wherein the one of the plurality of predetermined patterns overlays the captured image, wherein the user equipment is one of a mobile phone, smartphone and tablet.

2. The method according to claim 1, the method further comprising manipulating, by the user equipment, the one of the plurality of predetermined patterns.

3. The method according to claim 2, wherein the manipulating comprises resizing, cutting, and cropping.

4. The method according to claim 1, wherein the plurality of predetermined patterns comprise licensed static quilting patterns.

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5. The method according to claim 1, wherein the plurality of predetermined patterns comprise a plurality of predetermined quilting patterns.

6. The method according to claim 1, wherein the combining comprises overlaying one of the plurality of predetermined patterns over the captured image to scale.

7. The method according to claim 1, the method further comprising displaying the combined image.

8. A method of viewing, the method comprising:

(a) transmitting, by a quilting machine, a plurality of predetermined patterns to a server;

(b) capturing, by a user equipment, an image of a work piece;

(c) accessing, by the user equipment, the plurality of predetermined patterns on the server, wherein the plurality of predetermined patterns comprise licensed static quilting patterns; and

(d) combining, by the user equipment, the captured image with one of the plurality of predetermined patterns, wherein the one of the plurality of predetermined patterns overlays the captured image, wherein the user equipment is one of a mobile phone, smartphone and tablet.

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