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Hamburgen et al.

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(54) **SPACEBAR INTEGRATED WITH TRACKPAD**

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(22) Filed: **Mar. 28, 2011**

Related U.S. Application Data

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(51) **Int. Cl.**

G06F 3/033	(2013.01)
G09G 5/08	(2006.01)
G06F 3/0488	(2013.01)

(52) **U.S. Cl.**
CPC ***G06F 3/0488*** (2013.01)

(58) **Field of Classification Search**
USPC 345/163, 173–183, 156–158, 167, 168; 715/764, 856–862
See application file for complete search history.

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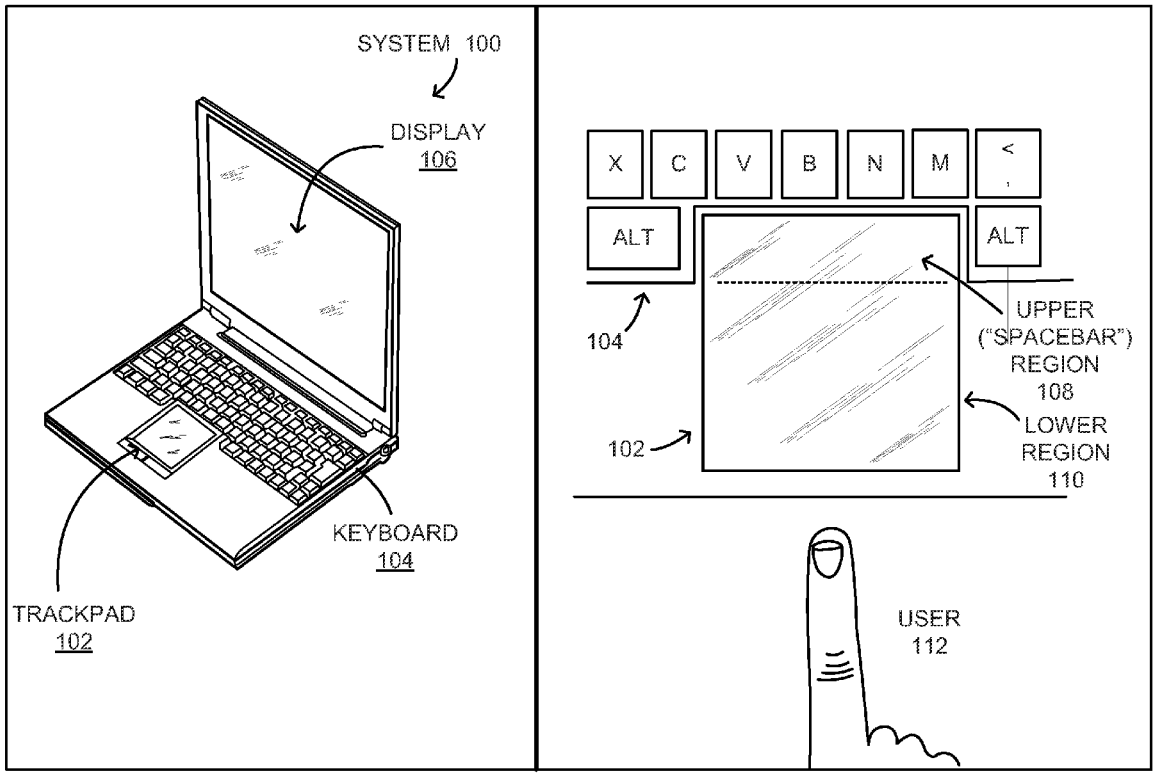
(57) **ABSTRACT**

An apparatus includes a keyboard and a trackpad, where a spacebar for the keyboard is integrated as a part of the trackpad.

30 Claims, 7 Drawing Sheets



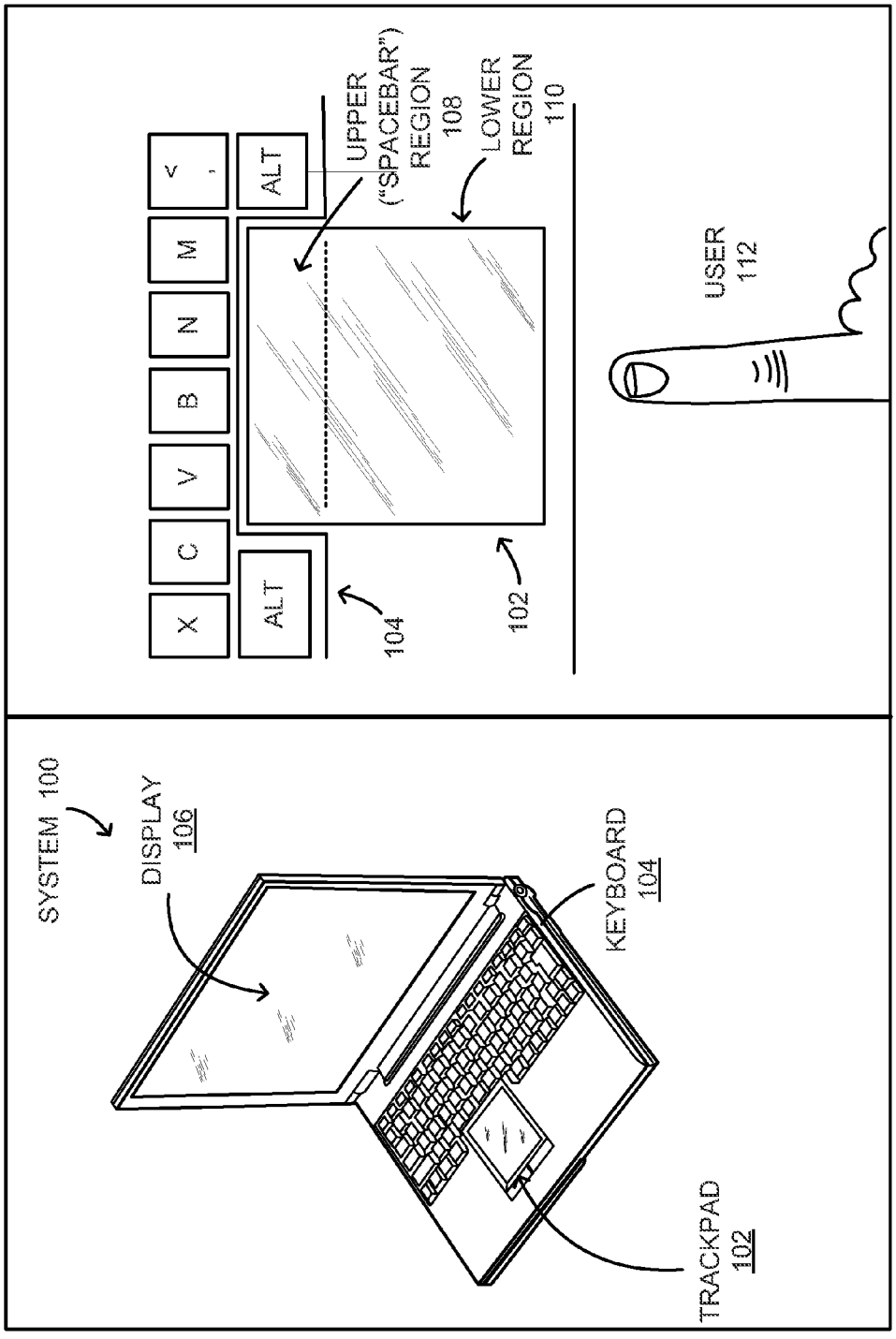

SYSTEM 100
DISPLAY 106
KEYBOARD 104
TRACKPAD 102
X
C
V
B
N
M
ALT
ALT
UPPER ("SPACEBAR") REGION 108
LOWER REGION 110
104
102
USER 112

FIG. 1A

FIG. 1B

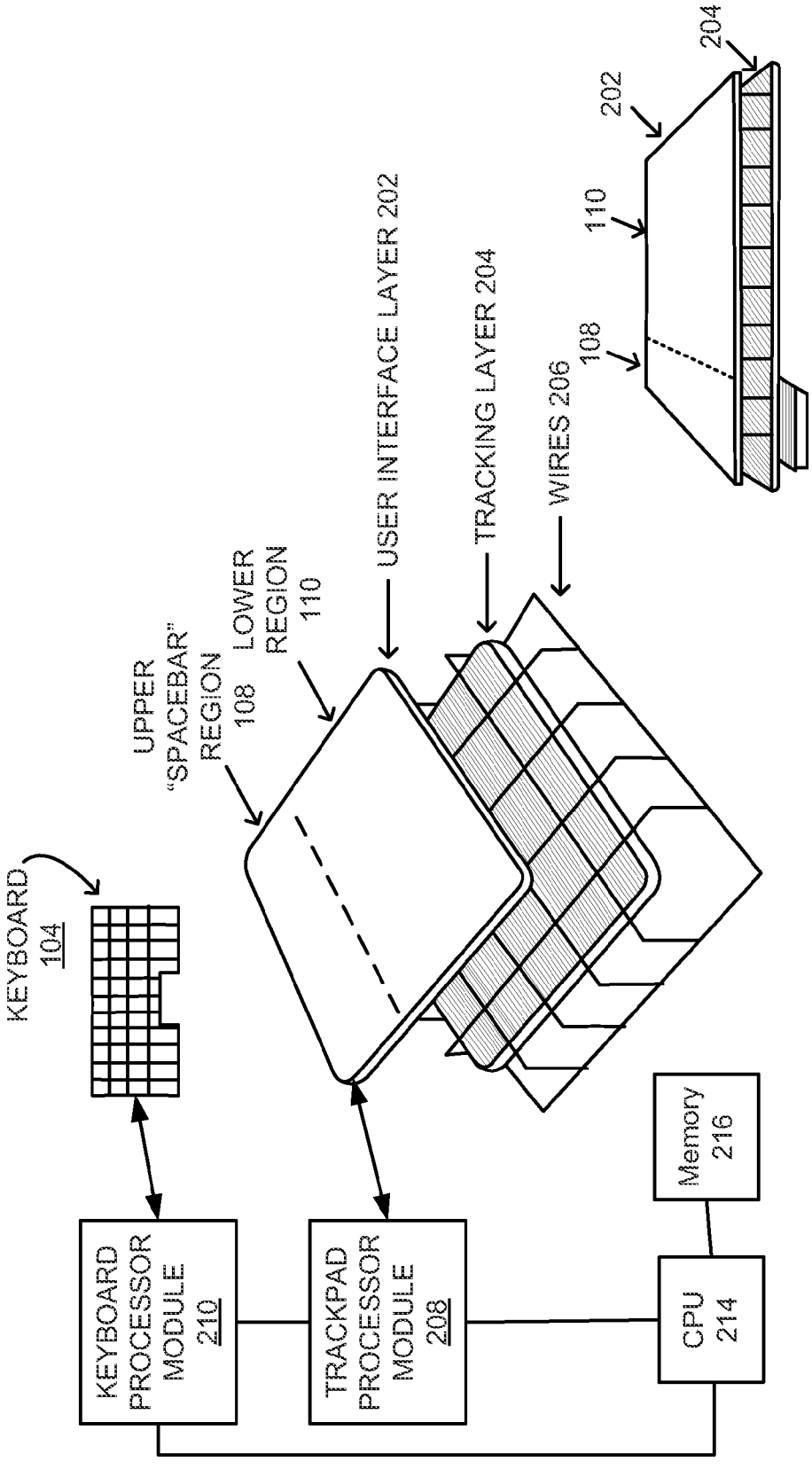

KEYBOARD 104
UPPER "SPACEBAR" REGION 108
LOWER REGION 110
USER INTERFACE LAYER 202
TRACKING LAYER 204
WIRES 206
KEYBOARD PROCESSOR MODULE 210
TRACKPAD PROCESSOR MODULE 208
CPU 214
Memory 216

FIG. 2A

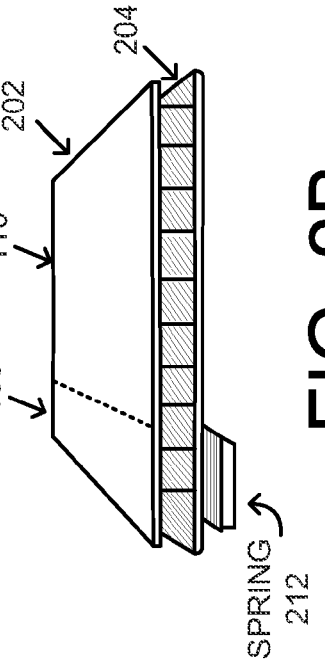

204
202
110
108
SPRING 212

FIG. 2B

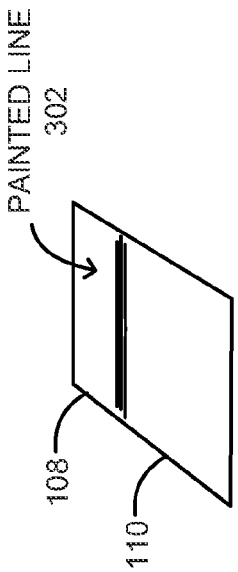


FIG. 3A

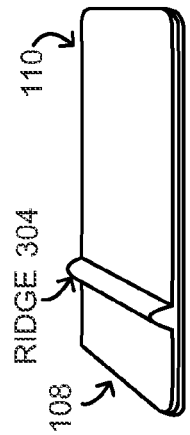


FIG. 3B

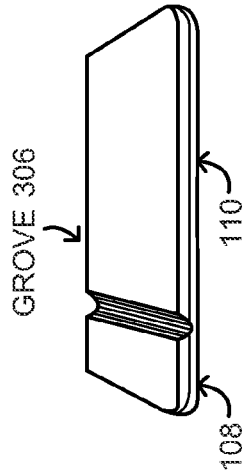


FIG. 3C

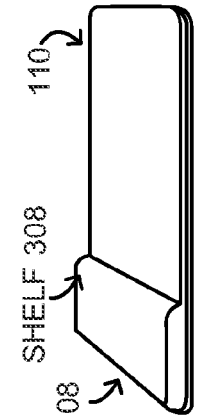


FIG. 3D

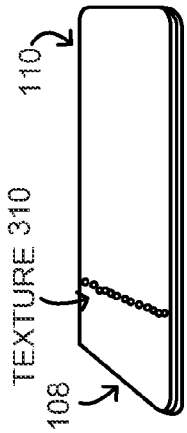


FIG. 3E

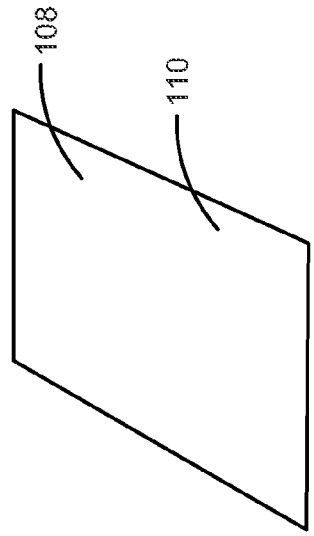


FIG. 3F

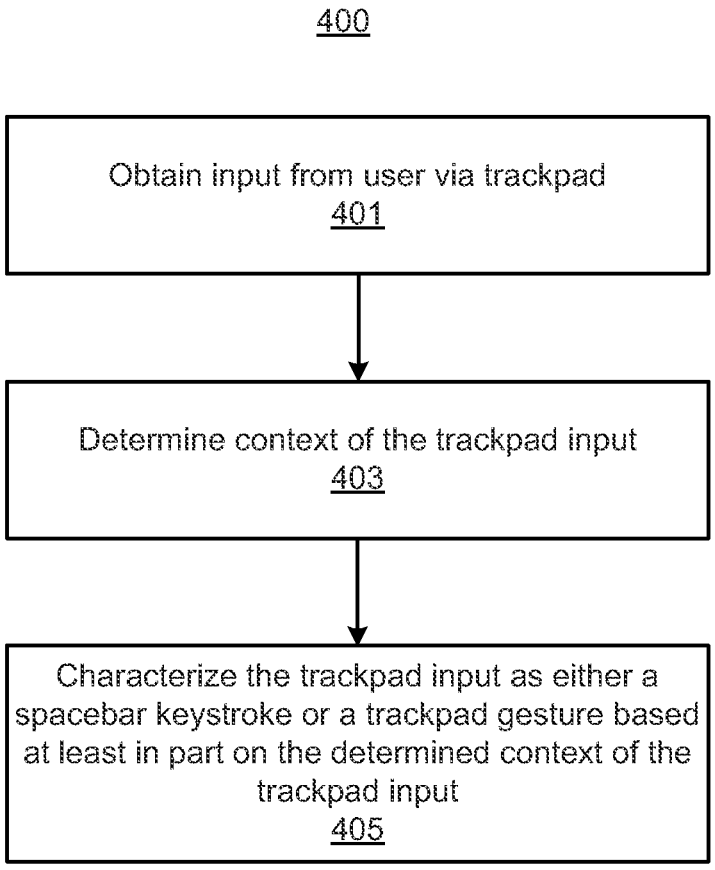

400
Obtain input from user via trackpad
401
Determine context of the trackpad input
403
Characterize the trackpad input as either a spacebar keystroke or a trackpad gesture based at least in part on the determined context of the trackpad input
405

FIG. 4A

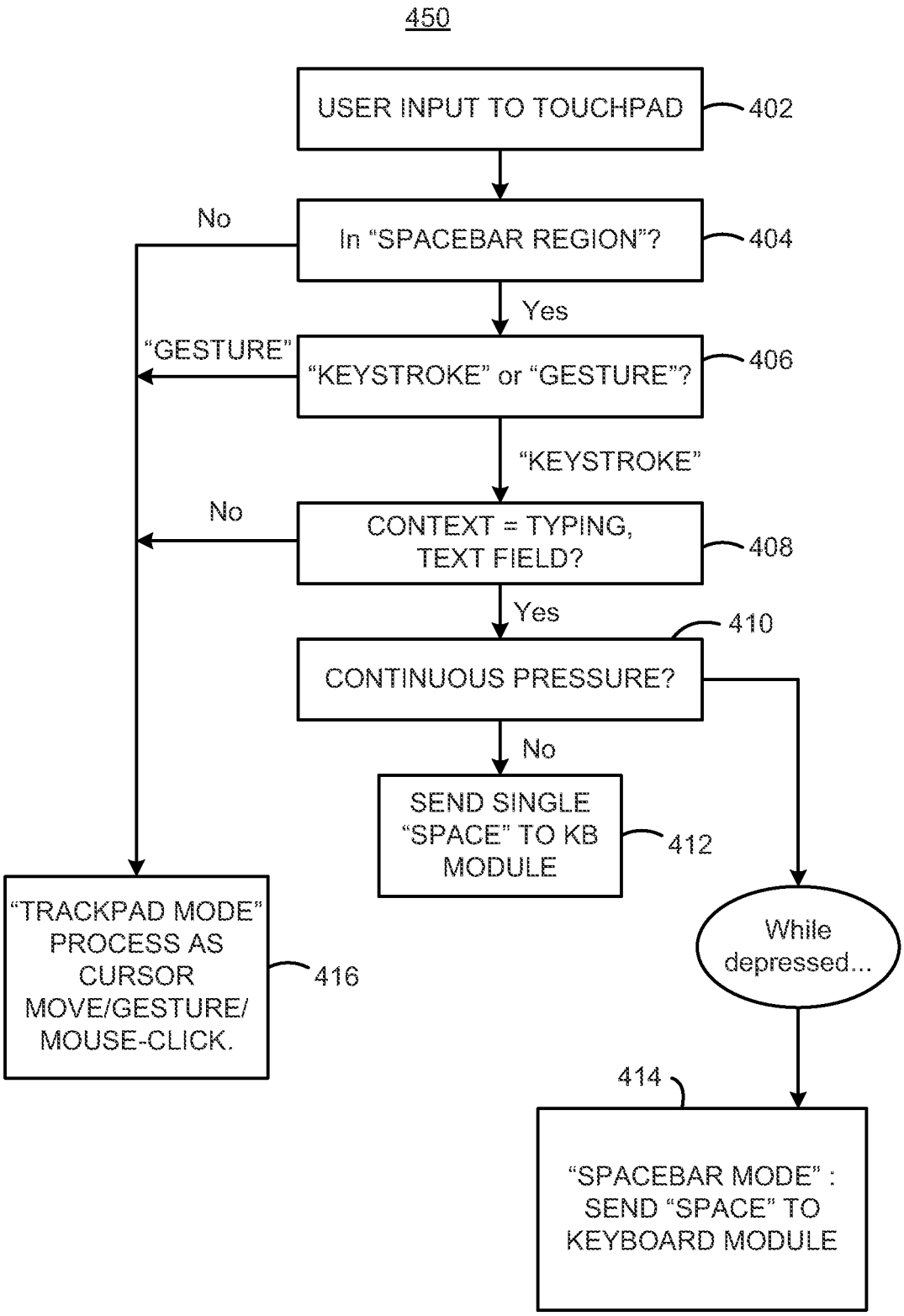

450
USER INPUT TO TOUCHPAD
402
In "SPACEBAR REGION"?
404
No
Yes
"KEYSTROKE" or "GESTURE"?
406
"GESTURE"
"KEYSTROKE"
CONTEXT = TYPING, TEXT FIELD?
408
No
Yes
CONTINUOUS PRESSURE?
410
No
SEND SINGLE "SPACE" TO KB MODULE
412
"TRACKPAD MODE" PROCESS AS CURSOR MOVE/GESTURE/ MOUSE-CLICK.
416
While depressed...
414
"SPACEBAR MODE" : SEND "SPACE" TO KEYBOARD MODULE

FIG. 4B

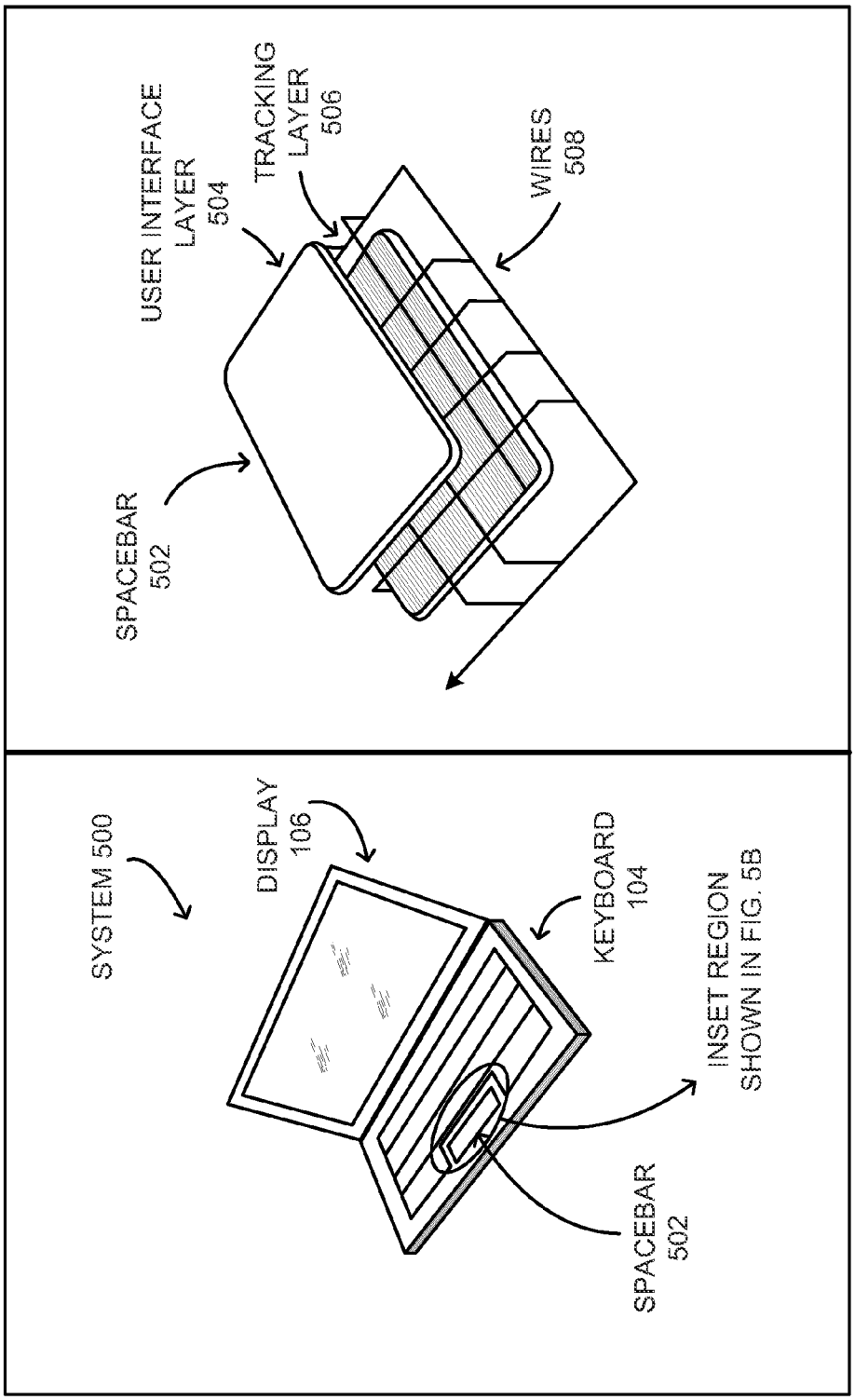

SYSTEM 500
DISPLAY 106
KEYBOARD 104
INSET REGION SHOWN IN FIG. 5B
SPACEBAR 502
SPACEBAR 502
USER INTERFACE LAYER 504
TRACKING LAYER 506
WIRES 508

FIG. 5A

FIG. 5B

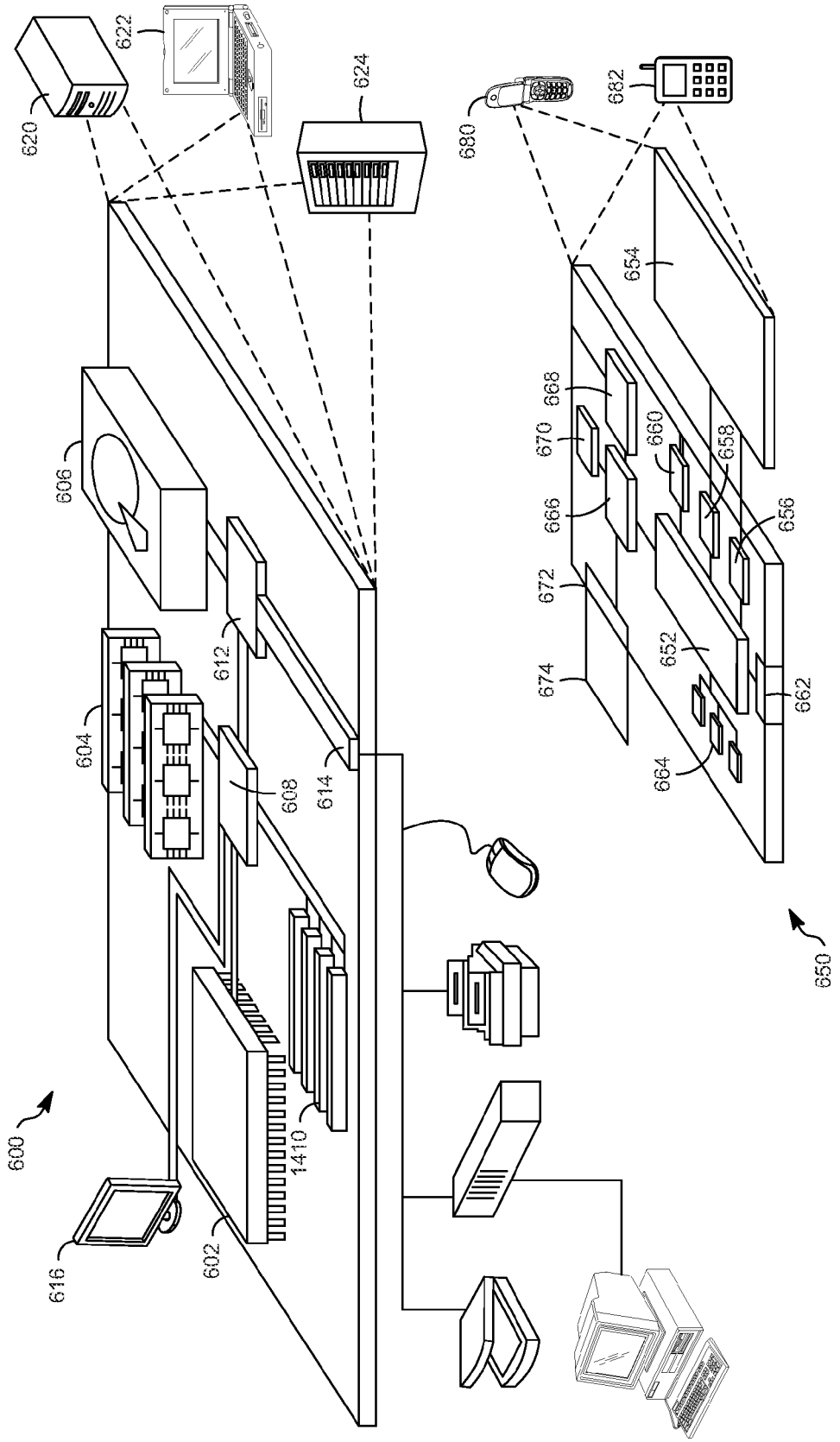

620
622
624
680
682
654
668
670
660
658
666
656
672
652
674
662
664
606
612
604
608
614
600
1410
602
616
650

FIG. 6

SPACEBAR INTEGRATED WITH TRACKPAD

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No. 61/387,287, filed Sep. 28, 2010, entitled "Spacebar Integrated With Trackpad," which is hereby incorporated by reference in its entirety.

TECHNICAL FIELD

This description relates to acquiring user input for computing devices.

BACKGROUND

Computing devices typically use user input to perform desired computing tasks. User input can be supplied in various forms. Typically, user input comes either in the form of characters such as, for example, letters, numbers or other characters entered by typing on a keyboard, or in the form of touch input gestures such as, for example, scrolling cursor movements, clicks and other gestures entered by touching a trackpad, moving a mouse, or interacting with another touch- or motion-sensitive device or area.

Computing devices often include at least two distinct means of gathering these two primary forms of user input: For example, a portable computer may include both a keyboard and a trackpad, in addition to its display, processor and other hardware. The keyboard is configured for character entry and to perform shortcut commands via keystroke. The trackpad is configured to control cursor movement, and for scrolling, selecting items, and inputting other control gestures. Other touch devices, such as an external mouse, can in some cases be connected to the computer to duplicate or to supplement trackpad function; however, it may be typical to interact with portable computers primarily via the included trackpad.

Computers, particularly portable computing devices, have decreased dramatically in size in recent years. As such, space is at a premium and efficient allocation of space on device surfaces is increasingly important.

To operate software on a portable computer, a user generally interacts with both the keyboard and the trackpad. Normal typing on the keyboard typically occupies both of the user's hands, and using the trackpad requires the use of at least one hand.

The keyboard includes a plurality of keys, representing letters (e.g., Q, W, E, R, T, Y), numbers (e.g., 1, 2, 3), characters and symbols (e.g., Space, #, $, %) and functions (e.g. Ctrl, Esc, Shift). The spacebar key is typically positioned at the bottom center of the keyboard area, and its normal function during typing is to insert a blank space character, for example, to delineate boundaries between words.

The trackpad is a touch-sensitive surface on which the user can enter input. For example, depending on the computing context, the user may tap one or more fingertips on the surface of the trackpad, or place one or more fingertips on the surface and drag them in a particular pattern. The trackpad also may have separate buttons duplicating the clickable buttons on a mouse, or it may be clickable anywhere on its surface, or both. Other names for the trackpad include, for example, the touchpad, the track pad, and the touch pad.

Many computing applications may require the user to use both the keyboard and the trackpad, often switching rapidly between them. For example, in a word processing application, the user may type to enter text using the keyboard, and then wish to insert text into an earlier passage in the document. Using the trackpad, the user could scroll the cursor to the desired location in the document and click to position the cursor. The user could then switch to the keyboard and type the desired text, before scrolling back to the original position using the trackpad, clicking, and continuing to type. Such parallel use of trackpad and keyboard is common in many computing applications, such as, for example, web browsing, spreadsheets, word processing, e-mail programs, presentation managers, and photo and video editing software.

SUMMARY

In one general aspect, an apparatus includes a keyboard and a trackpad, where a spacebar for the keyboard is integrated as a part of the trackpad.

Implementations may include one or more of the following features. For example, at least a portion of the trackpad may be configured to function as the spacebar. A portion of the trackpad may extend into a region for the spacebar on the keyboard and the portion of the trackpad may be configured to function as the spacebar. A top portion of the trackpad may be profiled to simulate a shape of the spacebar. A top portion of the trackpad may extend into a region of the keyboard for the spacebar and may include a switch set that is configured to function as the spacebar. A bottom edge of the trackpad may include a first switch that is configured to function as a left mouse button and a second switch that is configured to function as a right mouse button.

The trackpad may include one or more spring mechanisms. The one or more spring mechanisms may be positioned beneath a portion of the trackpad that is configured to function as the spacebar.

The trackpad may include a boundary delineating a top portion of the trackpad from a bottom portion of the trackpad. The boundary may include a visual indicator. The boundary may include a tactile indicator. The boundary may include a shelf. The boundary may include a ridge. The boundary may include a groove.

The apparatus may include one or more processors configured to process input from the keyboard and the trackpad. The apparatus may include a keyboard controller module and a trackpad controller module, where the keyboard is connected to the keyboard controller module and the trackpad is connected to the trackpad controller module. The keyboard may be configured without a key for the spacebar.

In another general aspect, an apparatus may include a keyboard including a spacebar, where the spacebar is configured to function as at least a portion of a trackpad.

Implementations may include one or more of the following features. For example, the apparatus may include one or more processors configured to process input from the keyboard and the spacebar.

In another general aspect, a method includes executing instructions recorded on a non-transitory computer-readable storage media using at least one processor. The method includes obtaining an input from a user via a trackpad, determining a context of the trackpad input and characterizing the trackpad input as either a spacebar keystroke or a trackpad gesture based at least in part on the determined context of the trackpad input.

Implementations may include one or more of the following features. For example, the trackpad gesture may include a tracking gesture. The trackpad gesture may include a click gesture. Determining the context of the trackpad input may include determining whether the trackpad input contacted a spacebar region of the trackpad. Determining the context of

the trackpad input may include determining whether the trackpad input included a tap motion, a sliding motion or a combination of the tap motion and the sliding motion. Determining the context of the trackpad input may include determining whether the trackpad input activated a spring mechanism in the trackpad. Determining the context of the trackpad input may include determining whether the trackpad input included a continuous pressure on the trackpad. Determining the context of the trackpad input may include determining an application context of the trackpad input. Determining the context of the trackpad input may include determining a text entry context of the trackpad input. Determining the context of the trackpad input may include determining a duration of the trackpad input.

In another general aspect, a recordable storage medium has recorded and stored thereon instructions that, when executed, perform the actions of obtaining an input from a user via a trackpad, determining a context of the trackpad input and characterizing the trackpad input as either a spacebar keystroke or a trackpad gesture based at least in part on the determined context of the trackpad input.

Implementations may include one or more of the following features. For example, the trackpad gesture may include a tracking gesture. The trackpad gesture may include a click gesture. Determining the context of the trackpad input may include determining whether the trackpad input contacted a spacebar region of the trackpad. Determining the context of the trackpad input may include determining whether the trackpad input included a tap motion, a sliding motion or a combination of the tap motion and the sliding motion. Determining the context of the trackpad input may include determining whether the trackpad input activated a spring mechanism in the trackpad. Determining the context of the trackpad input may include determining whether the trackpad input included a continuous pressure on the trackpad. Determining the context of the trackpad input may include determining an application context of the trackpad input. Determining the context of the trackpad input may include determining a text entry context of the trackpad input. Determining the context of the trackpad input may include determining a duration of the trackpad input.

The details of one or more implementations are set forth in the accompanying drawings and the description below. Other features will be apparent from the description and drawings, and from the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1**A is an exemplary block diagram of a system for acquiring user input for a computing device by means of a keyboard integrated with a trackpad.

FIG. **1**B is an exemplary diagram of the inset of FIG. **1**A.

FIG. **2**A is a diagram of an implementation of the system of FIG. **1**A.

FIG. **2**B is an exemplary diagram of an implementation of the system of FIG. **1**A, depicting an implementation with a spring.

FIGS. **3**A-**3**F are exemplary diagrams of possible implementations of the system of FIG. **1**A, depicting various ways to delineate the spacebar region on the trackpad.

FIG. **4**A is a flowchart illustrating example operations of the system of FIG. **1**A.

FIG. **4**B is a flowchart illustrating example operations of the system of FIG. **1**A.

FIG. **5**A is an exemplary diagram of a system for acquiring user input for a computing device.

FIG. **5**B is an exemplary diagram of the inset of FIG. **5**A.

FIG. **6** depicts an example of a computer device and a mobile computer device that can be configured to implement the system and techniques described here.

DETAILED DESCRIPTION

FIG. **1**A is an exemplary diagram of a system **100** for acquiring user input for a computing device by means of a keyboard **104** comprising a region for a spacebar, integrated with a trackpad **102** that is configured to control movement of a cursor on a display **106**. In FIG. **1**A, the system **100** integrates the trackpad with a portion of the keyboard, in particular with the spacebar key. Merging the spacebar and a region of the trackpad into a single area is space-efficient, and moreover saves effort on the part of the user by, for example, obviating the need to physically move between the keyboard and the trackpad.

FIG. **1**B depicts the inset from FIG. **1**A, depicting the exemplary system of FIG. **1**A in further detail.

The system **100** includes a trackpad **102**. The trackpad **102** may be configured, for example, to control navigation on the display **106** including controlling the movement of a cursor or other pointer on the display **106**. For example, the trackpad **102** may be configured to scroll the cursor between icons on the display and to select an icon corresponding to a desired application. The trackpad **102** also may be configured to perform other one-finger and multi-finger functions including pointing and input-related functions such as, for example, selecting, deselecting, copying, cutting, pasting, tapping, clicking, dragging, drawing, pinching, swiping, rotating, zooming and other functions.

The system **100** includes a keyboard **104**. The keyboard **104** may be configured, for example, to enter text or characters in the context of a software application. For example, the keyboard **104** may be configured to type words in a document in a word processing application. In this example implementation, the keyboard **104** does not include a spacebar.

In the system **100**, the trackpad **102** is integrated with the keyboard **104** such that the region of the keyboard **104** normally comprising the spacebar includes a portion of the trackpad **102**, which may be referred to as an upper region or the spacebar region **108**. The portion of the trackpad **102** that extends into or occupies the portion of the keyboard normally reserved for the spacebar is the spacebar region **108** of the trackpad **102**. Any portion of the trackpad not occupying the spacebar region may be referred to as the lower region **110**.

The upper spacebar region **108** of the trackpad **102** may be configured, for example, both as a trackpad and as a spacebar key. For example, a user **112** may utilize the entire trackpad surface **102** including the spacebar region **108** for mousing operations, cursor movement, selection of objects, etc., by using a one finger or multiple fingers to interact with the trackpad **102**, and may also use the spacebar region **108** of the trackpad **102** as a spacebar by applying, for example, a keystroke motion to this region **108**.

The lower region **110** of the trackpad **102** may function, for example, as a typical trackpad. For example, a user **112** may utilize the entire trackpad surface **102** including the lower region **110** for navigation, pointing and input-related functions such as, for example, selecting, deselecting, copying, cutting, pasting, tapping, clicking, dragging, drawing, pinching, swiping, rotating, zooming and other functions by using one or more fingertips to interact with the trackpad **102**.

Other possible implementations of the system **100** exist other than that depicted in FIG. **1**A, such as an example implementation in which the entire trackpad **102** may function as both the spacebar and the trackpad. In this example

implementation, the entire trackpad region **102** may be configured to function equivalently to the upper region **108** described above. For example, a user **112** could enter spacebar keystrokes or trackpad gestures (e.g., click gestures and tracking gestures) to any portion of the trackpad **102**, and the system **100** would, as described in further detail below, determine whether to handle the input as a spacebar keystroke or as trackpad input.

FIG. **2**A is a diagram of an implementation of the system of FIG. **1**A, depicting components of the system **100**. As noted above, the system **100** includes a keyboard **104** and trackpad **102**, and the trackpad **102** includes a region that occupies or extends into the region of the keyboard **104** normally reserved for the spacebar key. This region is the upper "spacebar" region **108** of the trackpad **102**, and any other region not occupying the spacebar area is the lower region **110**.

The system **100** may also include a central processing unit (CPU) **214** and a memory **216**. The CPU **214** may be configured, for example, to handle the processing needs of the system **100**. For example, the CPU **214** may handle instructions pertaining to operating system function, system management, software program execution and interfaces between system components. The memory **216** may be implemented as a non-transitory storage medium and may be configured to store instructions for execution by the CPU **216**, including firmware, operating system instructions and instructions relating to the functioning of the trackpad **102** and the keyboard **104**. The memory **216** also may be configured to store tracking and history information related to trackpad **102** and keyboard **104** inputs.

The system **100** may also include a keyboard processor module **210**. The keyboard processor module **210** may be configured, for example, to process keystrokes and input from the keyboard and send the processed input to the CPU **214**. For example, the keyboard processor module **210** may be configured to interpret a series of keystrokes input by the user **112**, recognize the characters corresponding to the keys pressed, and transmit this string of characters to the CPU **214**.

The system **100** may also include a trackpad processor module **208**. The trackpad processor module **208** may be configured, for example, to process input from the trackpad and send the processed input to the CPU **214**. For example, the trackpad processor module **208** may be configured to interpret a series of gestures, taps, clicks, or a combination thereof input by the user **112** to the trackpad **102**, recognize the input and transmit it to the CPU **214**.

The trackpad **102** includes a spacebar region **108** and may include a lower region **110**, and may also be comprised of several layers as shown in FIG. **2**A.

In the example implementation shown in FIG. **2**A, a user interface layer **202** comprises the surface of the trackpad **102**, and is the layer that the user touches in order to enter an input to the trackpad **102**. For example, the user (e.g., user **112** of FIG. **1**) may tap the user interface layer **202** with a fingertip and/or slide one or more fingertips across the user interface layer **202**. In this example implementation, the user interface layer **202** may be composed of glass, plastic, composite or any other material suitable for a trackpad **102** surface.

In the same example implementation shown in FIG. **2**A, a tracking layer **204** sits beneath the user interface layer **202**, and may include wires **206** to carry one or more signals corresponding to touch inputs provided by the user (e.g., user **112** of FIG. **1**). The tracking layer **204** may be used, for example, to capture user input applied to the user interface layer **202**, and convert the input to one or more signals to be used by the system in order to record, process and handle user input. Other implementations of the tracking layer **204** are possible, such as, for example, a tracking layer **204** not utilizing wires **206**, but instead tracking user touch inputs by other means.

Wires **206**, if present in the implementation, may be organized in a grid or crossbar pattern as shown in the example implementation in FIG. **2**A, or in another pattern suitable for capturing user input on the user interface layer **202**. For example, wires **206** may also be oriented in a spiral pattern, a triangular or other regular grid pattern, an irregular grid pattern, a pad array or another pattern.

In one possible implementation depicted in FIG. **2**A, the trackpad **102** may be connected to the trackpad processor module **208**. In this case, the trackpad processor module **208** may interpret the input from the trackpad **102**, and in particular from the spacebar region **108**, to determine, for example, whether a given input should be classified as a spacebar keystroke or a trackpad input. For example, a user (e.g., user **112** of FIG. **1**) striking the spacebar region **108** of the trackpad **102** with a fingertip might intend for the strike to be interpreted as a spacebar keystroke, or as a tap on the trackpad **102**. In this implementation, the trackpad processor module **208** may interpret the input according to, for example, the computing context in which the user is operating, or characteristics of the user's input gesture, or by other means. The trackpad processor module **208** also may be configured to ignore or reject spurious inputs such as, for example, one or more fingers resting on the trackpad **102**.

In other possible implementations, distinguishing between spacebar keystrokes and trackpad input may be performed, for example, by the keyboard processor module **210**, by the CPU **214** itself, by a combination of the trackpad processor module **208**, the keyboard processor module **21** and the CPU **214**, or by other means.

The trackpad **102** may also include one or more spring mechanisms **212** such as one or more springs. The spring or springs may be used, for example, to provide tactile feedback to register pressure in the form of a button-press or a keystroke when applied by the user **112** to a region of the trackpad **102** located above a spring mechanism **212**. For example, a spring mechanism **212** could be positioned beneath the spacebar region **108** of the trackpad **102** to simulate to the user (e.g., user **112** of FIG. **1**) the feeling of pressing and releasing a key when this region **108** is pressed.

Referring to FIG. **2**B, a spring mechanism **212** is positioned beneath the spacebar region **108** of the trackpad **102**, and situated beneath both the user interface layer **202** and the tracking layer **204**. Other implementations are possible, including, for example, a spring mechanism **212** positioned under other regions of the trackpad **102** or the entire trackpad **102**, a plurality of springs positioned under some or all of the trackpad **102**, a spring mechanism **212** that is positioned outside the edge of the trackpad **102**, spring mechanisms **112** at one or more corners or a spring mechanism **212** positioned between the user interface layer **202** and the tracking layer **204**.

In the example implementation depicted in FIG. **2**B, the spring mechanism **212** is not depicted as being connected to the trackpad processor module **208** or the keyboard processor module **210** or the CPU **214**. In this implementation, the spring mechanism **212** may be used, for example, to provide tactile feedback to the user that a particular region of the trackpad **102** has been pressed, while actual handling of the input is performed as described above.

Other implementations are possible wherein the spring mechanism **212** is separately connected to the trackpad processor module **208** or the keyboard processor module **210** or the CPU **214**. In such implementations, the spring mechanism

212 may be used, for example, to supply additional input to the trackpad processor module 208 or the keyboard processor module 210 or the CPU 214, regarding the location and the type of input supplied by the user to the trackpad 102, specifically to the region of the trackpad 102 connected to the spring mechanism 212.

FIGS. 3A-3F are exemplary block diagrams of possible implementations of the system of FIG. 1A, depicting various ways to delineate the spacebar region on the trackpad. A delineation between the spacebar region 108 and the lower region 110 may be used, for example, to inform or remind the user of the location of the spacebar region 108 of the trackpad 102. For example, the user 112 might notice a partition between the spacebar region 108 and the lower region 110 of the trackpad 102 and thus realize that, to enter a spacebar keystroke, the spacebar region 108 must be pressed.

FIGS. 3A-3F present several possible implementations of delineating the spacebar region 108 from the lower region 110 of the trackpad 102. These implementations include a visual indicator 302 applied to the trackpad 102, a raised ridge 304 applied to the trackpad 102, a groove 306 applied to the trackpad 102, a shelf 308, texture 310 and no delineation.

In one example implementation depicted in FIG. 3A, a visual indicator 302 may be applied to the trackpad 102 to delineate the spacebar region 108 from the lower region 110. The visual indicator 302 may be used, for example, to delineate for the user 112 the spacebar region 108 from the lower region 110 of the trackpad 102, and thus to inform the user at which position to interact with the trackpad 102 in order to input a spacebar keystroke. For example, a user 112 working in a word processing environment may wish to enter a space between words, and thus would seek to enter a spacebar keystroke; by looking at, for example, the visual indicator 302 on the surface of the trackpad 102, the user 112 would realize the boundary delineating the spacebar region 108 and would know to localize the input to that area in order to effect a spacebar keystroke.

In the implementation shown in FIG. 3A, the visual indicator is depicted as a painted line on the surface of the user interface layer 202. Other implementations of the visual indicator 302 are possible. For example, the visual indicator 302 may be a differently-colored or differently-tinted portion of the trackpad 102, or a marking on the trackpad 102 made using other ink, dye, liquid crystal display (LCD), or by other means. The visual indicator may also be a light, laser or image projected onto the surface of the trackpad 102, or displayed on the surface of the trackpad 102, or a marking, light, laser or image projected, displayed or affixed below the surface of the trackpad 102, for example to the tracking layer 204 if the user interface layer 202 is, for example, transparent or translucent.

In another example implementation depicted in FIG. 3B, the trackpad 102 may include a raised ridge 304 to delineate the spacebar region 108 from the lower region 110. The raised ridge 304 may be used, for example, to delineate for the user 112 the spacebar region 108 from the lower region 110 of the trackpad 102, and thus to inform the user at which position to interact with the trackpad 102 in order to input a spacebar keystroke. For example, a user 112 working in a word processing environment may wish to enter a space between words, and thus would seek to enter a spacebar keystroke; by feeling, for example, the raised ridge 304 on the surface of the trackpad 102, the user 112 would realize the boundary delineating the spacebar region 108 and would know to localize the input to that area in order to effect a spacebar keystroke.

In the implementation shown in FIG. 3B, the raised ridge 304 is depicted as a ridge on the surface of the user interface layer 202 of the trackpad 102, formed from the same material as the user interface layer 202. Other implementations of the raised ridge 304 are possible. For example, the raised ridge 304 may be a separate piece of material affixed to the surface of the user interface layer 202, or it may be a raised protrusion underneath the user interface layer 202 that can be felt through the user interface layer 202. The raised ridge 304 may also be a wire or other protrusion from the surface of the trackpad 102 or embedded in the surface of the trackpad 102, or a wire or channel carrying a current or signal capable of being sensed by the user's 112 fingertip. The raised ridge 304 may also consist of a region of differing texture from the surrounding regions of the user interface layer 202, or it may consist of the spacebar region 108 having a different texture than the lower region 110.

In another example implementation depicted in FIG. 3C, the trackpad 102 may include a groove 306 to delineate the spacebar region 108 from the lower region 110. The groove 306 also may be used, for example, to delineate for the user 112 the spacebar region 108 from the lower region 110 of the trackpad 102, and thus to inform the user at which position to interact with the trackpad 102 in order to input a spacebar keystroke. For example, a user 112 working in a word processing environment may wish to enter a space between words, and thus would seek to enter a spacebar keystroke; by feeling, for example, the groove 306 on the surface of the trackpad 102, the user 112 would realize the boundary delineating the spacebar region 108 and would know to localize the input to that area in order to effect a spacebar keystroke.

In the implementation shown in FIG. 3C, the groove 306 is depicted as a groove on the surface of the user interface layer 202 of the trackpad 102, an indentation in the same material as the user interface layer 202. Other implementations of the groove 306 are possible.

In another example implementation depicted in FIG. 3D, the trackpad 102 may include a shelf 308 to delineate the spacebar region 108 from the lower region 110. The shelf 308 may be used, for example, to delineate for the user 112 the spacebar region 108 from the lower region 110 of the trackpad 102, and thus to inform the user at which position to interact with the trackpad 102 in order to input a spacebar keystroke. For example, a user 112 working in a word processing environment may wish to enter a space between words, and thus would seek to enter a spacebar keystroke; by feeling, for example, the shelf 308 on the surface of the trackpad 102, the user 112 would realize the boundary delineating the spacebar region 108 and would know to localize the input to that area in order to effect a spacebar keystroke.

In the implementation shown in FIG. 3D, the shelf 308 is depicted as a shelf on the surface of the user interface layer 202 of the trackpad 102, formed from the same material as the user interface layer 202. Other implementations of the shelf 308 are possible. For example, the shelf 308 may be a separate piece of material affixed to the surface of the user interface layer 202, or it may be a raised protrusion underneath the user interface layer 202 that can be felt through the user interface layer 202. The shelf 308 may also consist of a region of differing texture from the surrounding regions of the user interface layer 202, or it may consist of the spacebar region 108 having a different texture than the lower region 110.

In another example implementation depicted in FIG. 3E, the trackpad 102 may include a texture 310 to delineate the spacebar region 108 from the lower region 110. The texture 310 may be used, for example, to delineate for the user 112 the spacebar region 108 from the lower region 110 of the trackpad 102, and thus to inform the user at which position to interact with the trackpad 102 in order to input a spacebar keystroke. For example, a user 112 working in a word processing envi-

ronment may wish to enter a space between words, and thus would seek to enter a spacebar keystroke; by feeling, for example, the texture **310** on the surface of the trackpad **102**, the user **112** would realize the boundary delineating the spacebar region **108** and would know to localize the input to that area in order to effect a spacebar keystroke.

In the implementation shown in FIG. **3**E, the texture **310** is depicted as small circular bumps on the surface of the user interface layer **202** of the trackpad **102**, formed from the same material as the user interface layer **202**. Other implementations of the texture **310** are possible. For example, the texture **310** may be a "rough" line, pyramid bumps, other shaped bumps and any type of surface texture to distinguish from a smooth surface. While not depicted, more or all of the spacebar region **108** may be covered with a texture to distinguish from a smooth lower region **110**.

In the final example implementation depicted in FIG. **3**D, the trackpad **102** may include no indicator to delineate the spacebar region **108** from the lower region **110**.

FIG. **4**A depicts a flowchart of a process **400**, illustrating example operations of the system of FIG. **1**A. This process **400** is an example embodiment of a process to handle user input to the system of FIG. **1**A. Process **400** may include obtaining input to the trackpad surface (**401**). For example, the user **112** may provide input to the trackpad **102**.

Process **400** includes determining the context of the trackpad input (**403**). For example, determining the context of the trackpad input may include determining whether the trackpad input contacted a spacebar region **108** of the trackpad **102**, determining whether the trackpad input was a tap, a sliding motion or a dragging motion, determining whether the trackpad input activated a spring mechanism in the trackpad, determining an application context of the trackpad input, determining a text entry context of the trackpad input, or determining a duration of the trackpad input. The trackpad processor module **208**, the keyboard processor module **210** and/or the CPU **214** may be used to determine the context of the trackpad input.

Process **400** includes characterizing the trackpad input as either a spacebar keystroke or a trackpad gesture based at least in part on the determined context of the trackpad input (**405**). For example, the trackpad processor module **208**, the keyboard processor module **210** and/or the CPU **214** may be used to characterize the trackpad input as either a spacebar keystroke or a trackpad gesture. A trackpad gesture may include a tracking gesture, a click gesture and other types of gestures.

FIG. **4**B is a flowchart illustrating example operations of the system of FIG. **1**A, in particular a possible process **450** for distinguishing spacebar keystrokes from trackpad input. Note that FIG. **4**B depicts one possible implementation of the process **450**, but that the steps of the process **450** can additionally be implemented in a different order than the order shown. The process depicted in FIG. **4**B may be carried out, for example, in the trackpad processor module **208**, if present, or in the keyboard processor module **210**, if present, or in the CPU **214**, if present, or by other means, such as, for example, by software or by a combination of the above.

The process **450** as depicted in FIG. **4**B begins with input **402** to the trackpad **102** by the user **112**. The input may be provided in the form of touching, tapping or pressing the surface of the trackpad **102** with a fingertip, or sliding or dragging one or more fingertips across the surface of the trackpad **102**. For example, the user **112** may tap the trackpad **102**.

Given the initial input **402**, the process determines **404** whether the input **402** was applied to the spacebar region **108** of the trackpad **102**. For example, the process may determine whether the input by the user **112** was a tap, touch, press, slide or drag located at least partly within the spacebar region **108** of the trackpad **102**.

The process **450** determines **404** whether the input **402** was applied to the spacebar region **108**. If the process **450** determines that the input **402** was not applied to the spacebar region **108**, the input is passed to the trackpad input handler **416** to be processed as trackpad input. The trackpad input handler may be included within the same processor as the process **450**, or the input may be passed to a separate processor such as the trackpad input processor **208** or the CPU **214**.

If the process **450** determines **404** that the input **402** was applied to the spacebar region **108**, the input is examined further within this process **450**.

The process **450** determines **406** whether the input **402** was, for example, a "tap" or a "sliding movement." A "tap" in this context means any user **112** input **402** that could be interpreted as a keystroke, such as, for example, a tap, press, or press and hold action on the spacebar region **108** of the trackpad **102**. A "sliding movement" in this context means any user **112** input **402** that could be interpreted as a mousing gesture, such as, for example, sliding or dragging one or more fingertips across the trackpad **102**.

The spring **212**, if present, could, for example, also be used to distinguish gestures from keystrokes in the input **402**. For example, an input **402** that merely touched the spacebar region **108** of the trackpad **102** user interface layer **202** without activating the spring **112** may be considered a sliding movement. On the other hand, an input **402** that touched the spacebar region **108** of the trackpad **102** user interface layer **202** and also activated the spring **112** may be considered a tap.

In another exemplary implementation, force or pressure history may be used to distinguish gestures (e.g., a click gesture) from a keystroke in the input **402**. A measure of the force over a period of time may be used to distinguish gestures from a keystroke in the input **402**. For example, an input **402** that merely touched the spacebar region **108** of the trackpad **102** user interface layer **202** without meeting a threshold pressure or force level may be considered a click gesture. On the other hand, an input **402** that touched the spacebar region **108** of the trackpad **102** user interface layer **202** and met and/or exceeded a threshold pressure or force level may be considered a keystroke.

If the process **450** determines **406** that the input **402** was a sliding movement, then the input may be passed to the trackpad input handler **416** to be processed as trackpad input as described above.

If the process **450** determines **406** that the input **402** was a tap, then the input is examined further within this process **400**.

The process **450** determines **408** the context of the input **402**. The context of the input may be, for example: The application context, for example, what program is running or what window is currently active; the input context within the operating system or any currently active software window, for example, whether the user is typing in a text entry field, or moving the cursor around the display; or other measures of context. For example, a user who supplies the aforementioned input **402** to the trackpad **102** while typing a sentence in a word processing program would be operating in the context of text entry.

Other possible implementations of the process **450** exist wherein context is determined by other means. For instance, as opposed to examining the software context, which requires the process **450** to interface with the operating system to acquire information regarding active software programs and recent keystrokes, the process **450** may also distinguish

between the text entry context and other contexts by the nature of the input **402**. For example, a certain type, strength, or duration of input to the trackpad **102** user interface layer **202** may automatically be interpreted as falling within the text entry context, while other types of input may not. For example, a press or tap of sufficient pressure or sufficiently short duration may automatically be interpreted by the process **400** as being within the text entry context.

The spring **212**, if present, could, for example, also be used to supply context information. For example, an input **402** that merely touched the spacebar region **108** of the trackpad **102** user interface layer **202** without activating the spring **112** may be considered to be not within the text entry context. On the other hand, an input **402** that touched the spacebar region **108** of the trackpad **102** user interface layer **202** and also activated the spring **112** may be considered to fall within the text entry context.

If the process **450** determines **408** that the input **402** is not supplied in the context of text entry, the input **402** may be passed to the trackpad input handler **416** to be processed as trackpad input as described above.

If the process **450** determines **408** that the input **402** is supplied in the context of text entry, this process **400** examines the input **402** further.

The process **450** determines **410** the duration of the input **402**. For example, the input **402** may be short, for example a tap or click on the spacebar region **108** of the trackpad **102** user interface layer **202**, or it may be long, for example a prolonged press on the spacebar region **108** of the trackpad **102** user interface layer **202**. For example, the user **112** working in a word processing program might tap the spacebar region **108** of the trackpad **102** user interface layer **202**, by, for example, touching the surface of the trackpad **102** briefly and then removing any pressure. This may be a short input. On the other hand, the user **112** working in a word processing program might press and hold the spacebar region **108** of the trackpad **102** user interface layer **202** for, for example, a second or more. This may be a long input.

If the process **450** determines **410** that the input **402** is short, then the process **400** may send a single space character **412** (or, for example, a single spacebar keystroke) to the system, for example, to the keyboard processor module **210** or the CPU **214** or by other means to the system so as to reflect the recognition of the input **402** by the user **112** as a press of the spacebar.

If the process **450** determines **410** that the input **402** is long, then the process **400** may send a series of space characters **414** (or, for example a series of spacebar keystrokes) to the system for the duration of the input, for example, to the keyboard processor module **210** or the CPU **214** or by other means to the system so as to reflect the recognition of the input **402** by the user **112** as a continued press of the spacebar.

FIG. **5**A is an exemplary diagram of a system for acquiring user input for a computing device by means of a keyboard integrated with a spacebar, where the spacebar key of the keyboard **104** is configured to function as both a spacebar and a trackpad.

In this example implementation, the system **500** includes a display **106** and a keyboard **104**, which includes a spacebar **502**. The system **500** does not include a trackpad. The spacebar **502** may be present and may be positioned in its normal location relative to the keys of the keyboard **104**, but in this example implementation the spacebar is configured to function as both a spacebar and a trackpad.

FIG. **5**B is an exemplary diagram of the inset of FIG. **5**A. Specifically, FIG. **5**B depicts an inset region of the example system **500** in more detail. The spacebar **502** may include a user interface layer **504**, a tracking layer **506** and wires **508**, which function similarly to those described above in FIG. **2**A.

In the example system **500**, the system may be configured to function similarly to the example system **100**, with the exception that in the system **500**, the user **112** may input gestures or spacebar keystrokes to the spacebar **502**, which is configured to function as a trackpad, as opposed to inputting those same gestures to the trackpad **102** which is configured to function as a spacebar, as depicted in FIGS. **1**A and **1**B.

FIG. **6** depicts an example of a generic computer device **600** and a generic mobile computer device **650**, which may be used with the techniques described here. Computing device **600** is intended to represent various forms of digital computers, such as laptops, desktops, workstations, personal digital assistants, servers, blade servers, mainframes, and other appropriate computers. Computing device **650** is intended to represent various forms of mobile devices, such as personal digital assistants, cellular telephones, smart phones, and other similar computing devices. The components shown here, their connections and relationships, and their functions, are meant to be exemplary only, and are not meant to limit implementations of the inventions described and/or claimed in this document.

Computing device **600** includes a processor **602**, memory **604**, a storage device **606**, a high-speed interface **608** connecting to memory **604** and high-speed expansion ports **610**, and a low speed interface **612** connecting to low speed bus **614** and storage device **606**. Each of the components **602**, **604**, **606**, **608**, **610**, and **612**, are interconnected using various busses, and may be mounted on a common motherboard or in other manners as appropriate. The processor **602** can process instructions for execution within the computing device **600**, including instructions stored in the memory **604** or on the storage device **606** to display graphical information for a GUI on an external input/output device, such as display **616** coupled to high speed interface **608**. In other implementations, multiple processors and/or multiple buses may be used, as appropriate, along with multiple memories and types of memory. Also, multiple computing devices **600** may be connected, with each device providing portions of the necessary operations (e.g., as a server bank, a group of blade servers, or a multi-processor system).

The memory **604** stores information within the computing device **500**. In one implementation, the memory **604** is a volatile memory unit or units. In another implementation, the memory **604** is a non-volatile memory unit or units. The memory **604** may also be another form of computer-readable medium, such as a magnetic or optical disk.

The storage device **606** is capable of providing mass storage for the computing device **600**. In one implementation, the storage device **606** may be or include a computer-readable medium, such as a floppy disk device, a hard disk device, an optical disk device, or a tape device, a flash memory or other similar solid state memory device, or an array of devices, including devices in a storage area network or other configurations. A computer program product can be tangibly embodied in an information carrier. The computer program product may also include instructions that, when executed, perform one or more methods, such as those described above. The information carrier is a computer- or machine-readable medium, such as the memory **604**, the storage device **606**, or memory on processor **602**.

The high speed controller **608** manages bandwidth-intensive operations for the computing device **600**, while the low speed controller **612** manages lower bandwidth-intensive operations. Such allocation of functions is exemplary only. In one implementation, the high-speed controller **608** is coupled

to memory **604**, display **616** (e.g., through a graphics processor or accelerator), and to high-speed expansion ports **610**, which may accept various expansion cards (not shown). In the implementation, low-speed controller **612** is coupled to storage device **606** and low-speed expansion port **614**. The low-speed expansion port, which may include various communication ports (e.g., USB, Bluetooth, Ethernet, wireless Ethernet) may be coupled to one or more input/output devices, such as a keyboard, a pointing device, a scanner, or a networking device such as a switch or router, e.g., through a network adapter.

The computing device **600** may be implemented in a number of different forms, as shown in the figure. For example, it may be implemented as a standard server **620**, or multiple times in a group of such servers. It may also be implemented as part of a rack server system **624**. In addition, it may be implemented in a personal computer such as a laptop computer **622**. Alternatively, components from computing device **600** may be combined with other components in a mobile device (not shown), such as device **650**. Each of such devices may include one or more of computing device **600**, **650**, and an entire system may be made up of multiple computing devices **600**, **650** communicating with each other.

Computing device **650** includes a processor **652**, memory **664**, an input/output device such as a display **654**, a communication interface **666**, and a transceiver **668**, among other components. The device **650** may also be provided with a storage device, such as a microdrive or other device, to provide additional storage. Each of the components **650**, **652**, **664**, **654**, **666**, and **668**, are interconnected using various buses, and several of the components may be mounted on a common motherboard or in other manners as appropriate.

The processor **652** can execute instructions within the computing device **650**, including instructions stored in the memory **664**. The processor may be implemented as a chipset of chips that include separate and multiple analog and digital processors. The processor may provide, for example, for coordination of the other components of the device **650**, such as control of user interfaces, applications run by device **650**, and wireless communication by device **650**.

Processor **652** may communicate with a user through control interface **658** and display interface **656** coupled to a display **654**. The display **654** may be, for example, a TFT LCD (Thin-Film-Transistor Liquid Crystal Display) or an OLED (Organic Light Emitting Diode) display, or other appropriate display technology. The display interface **656** may comprise appropriate circuitry for driving the display **654** to present graphical and other information to a user. The control interface **658** may receive commands from a user and convert them for submission to the processor **652**. In addition, an external interface **662** may be provide in communication with processor **652**, so as to enable near area communication of device **650** with other devices. External interface **662** may provide, for example, for wired communication in some implementations, or for wireless communication in other implementations, and multiple interfaces may also be used.

The memory **564** stores information within the computing device **650**. The memory **664** can be implemented as one or more of a computer-readable medium or media, a volatile memory unit or units, or a non-volatile memory unit or units. Expansion memory **674** may also be provided and connected to device **650** through expansion interface **672**, which may include, for example, a SIMM (Single In Line Memory Module) card interface. Such expansion memory **674** may provide extra storage space for device **650**, or may also store applications or other information for device **650**. Specifically, expansion memory **674** may include instructions to carry out or supplement the processes described above, and may include secure information also. Thus, for example, expansion memory **674** may be provide as a security module for device **650**, and may be programmed with instructions that permit secure use of device **650**. In addition, secure applications may be provided via the SIMM cards, along with additional information, such as placing identifying information on the SIMM card in a non-hackable manner.

The memory may include, for example, flash memory and/or NVRAM memory, as discussed below. In one implementation, a computer program product is tangibly embodied in an information carrier. The computer program product includes instructions that, when executed, perform one or more methods, such as those described above. The information carrier is a computer- or machine-readable medium, such as the memory **664**, expansion memory **674**, or memory on processor **652**, that may be received, for example, over transceiver **668** or external interface **662**.

Device **650** may communicate wirelessly through communication interface **666**, which may include digital signal processing circuitry where necessary. Communication interface **666** may provide for communications under various modes or protocols, such as GSM voice calls, SMS, EMS, or MMS messaging, CDMA, TDMA, PDC, WCDMA, CDMA2000, or GPRS, among others. Such communication may occur, for example, through radio-frequency transceiver **668**. In addition, short-range communication may occur, such as using a Bluetooth, WiFi, or other such transceiver (not shown). In addition, GPS (Global Positioning System) receiver module **670** may provide additional navigation- and location-related wireless data to device **650**, which may be used as appropriate by applications running on device **650**.

Device **650** may also communicate audibly using audio codec **660**, which may receive spoken information from a user and convert it to usable digital information. Audio codec **660** may likewise generate audible sound for a user, such as through a speaker, e.g., in a handset of device **650**. Such sound may include sound from voice telephone calls, may include recorded sound (e.g., voice messages, music files, etc.) and may also include sound generated by applications operating on device **650**.

The computing device **650** may be implemented in a number of different forms, as shown in the figure. For example, it may be implemented as a cellular telephone **680**. It may also be implemented as part of a smart phone **682**, personal digital assistant, or other similar mobile device.

Various implementations of the systems and techniques described here can be realized in digital electronic circuitry, integrated circuitry, specially designed ASICs (application specific integrated circuits), computer hardware, firmware, software, and/or combinations thereof. These various implementations can include implementation in one or more computer programs that are executable and/or interpretable on a programmable system including at least one programmable processor, which may be special or general purpose, coupled to receive data and instructions from, and to transmit data and instructions to, a storage system, at least one input device, and at least one output device.

These computer programs (also known as programs, software, software applications or code) include machine instructions for a programmable processor, and can be implemented in a high-level procedural and/or object-oriented programming language, and/or in assembly/machine language. As used herein, the terms "machine-readable medium" "computer-readable medium" refers to any computer program product, apparatus and/or device (e.g., magnetic discs, optical disks, memory, Programmable Logic Devices (PLDs)) used

to provide machine instructions and/or data to a programmable processor, including a machine-readable medium that receives machine instructions as a machine-readable signal. The term "machine-readable signal" refers to any signal used to provide machine instructions and/or data to a programmable processor.

To provide for interaction with a user, the systems and techniques described here can be implemented on a computer having a display device (e.g., a CRT (cathode ray tube) or LCD (liquid crystal display) monitor) for displaying information to the user and a keyboard and a pointing device (e.g., a mouse or a trackball) by which the user can provide input to the computer. Other kinds of devices can be used to provide for interaction with a user as well; for example, feedback provided to the user can be any form of sensory feedback (e.g., visual feedback, auditory feedback, or tactile feedback); and input from the user can be received in any form, including acoustic, speech, or tactile input.

The systems and techniques described here can be implemented in a computing system that includes a back end component (e.g., as a data server), or that includes a middleware component (e.g., an application server), or that includes a front end component (e.g., a client computer having a graphical user interface or a Web browser through which a user can interact with an implementation of the systems and techniques described here), or any combination of such back end, middleware, or front end components. The components of the system can be interconnected by any form or medium of digital data communication (e.g., a communication network). Examples of communication networks include a local area network ("LAN"), a wide area network ("WAN"), and the Internet.

The computing system can include clients and servers. A client and server are generally remote from each other and typically interact through a communication network. The relationship of client and server arises by virtue of computer programs running on the respective computers and having a client-server relationship to each other.

A number of embodiments have been described. Nevertheless, it will be understood that various modifications may be made without departing from the spirit and scope of the invention.

In addition, the logic flows depicted in the figures do not require the particular order shown, or sequential order, to achieve desirable results. In addition, other steps may be provided, or steps may be eliminated, from the described flows, and other components may be added to, or removed from, the described systems. Accordingly, other embodiments are within the scope of the following claims.

Implementations of the various techniques described herein may be implemented in digital electronic circuitry, or in computer hardware, firmware, software, or in combinations of them. Implementations may implemented as a computer program product, i.e., a computer program tangibly embodied in an information carrier, e.g., in a machine-readable storage device or in a propagated signal, for execution by, or to control the operation of, data processing apparatus, e.g., a programmable processor, a computer, or multiple computers. A computer program, such as the computer program(s) described above, can be written in any form of programming language, including compiled or interpreted languages, and can be deployed in any form, including as a stand-alone program or as a module, component, subroutine, or other unit suitable for use in a computing environment. A computer program can be deployed to be executed on one computer or on multiple computers at one site or distributed across multiple sites and interconnected by a communication network.

Method steps may be performed by one or more programmable processors executing a computer program to perform functions by operating on input data and generating output. Method steps also may be performed by, and an apparatus may be implemented as, special purpose logic circuitry, e.g., an FPGA (field programmable gate array) or an ASIC (application-specific integrated circuit).

Processors suitable for the execution of a computer program include, by way of example, both general and special purpose microprocessors, and any one or more processors of any kind of digital computer. Generally, a processor will receive instructions and data from a read-only memory or a random access memory or both. Elements of a computer may include at least one processor for executing instructions and one or more memory devices for storing instructions and data. Generally, a computer also may include, or be operatively coupled to receive data from or transfer data to, or both, one or more mass storage devices for storing data, e.g., magnetic, magneto-optical disks, or optical disks. Information carriers suitable for embodying computer program instructions and data include all forms of non-volatile memory, including by way of example semiconductor memory devices, e.g., EPROM, EEPROM, and flash memory devices; magnetic disks, e.g., internal hard disks or removable disks; magneto-optical disks; and CD-ROM and DVD-ROM disks. The processor and the memory may be supplemented by, or incorporated in special purpose logic circuitry.

To provide for interaction with a user, implementations may be implemented on a computer having a display device, e.g., a cathode ray tube (CRT) or liquid crystal display (LCD) monitor, for displaying information to the user and a keyboard and a pointing device, e.g., a trackpad or a mouse or a trackball, by which the user can provide input to the computer. Other kinds of devices can be configured to provide for interaction with a user as well; for example, feedback provided to the user can be any form of sensory feedback, e.g., visual feedback, auditory feedback, or tactile feedback; and input from the user can be received in any form, including acoustic, speech, or tactile input.

Implementations may be implemented in a computing system that includes a back-end component, e.g., as a data server, or that includes a middleware component, e.g., an application server, or that includes a front-end component, e.g., a client computer having a graphical user interface or a Web browser through which a user can interact with an implementation, or any combination of such back-end, middleware, or front-end components. Components may be interconnected by any form or medium of digital data communication, e.g., a communication network. Examples of communication networks include a local area network (LAN) and a wide area network (WAN), e.g., the Internet.

While certain features of the described implementations have been illustrated as described herein, many modifications, substitutions, changes and equivalents will now occur to those skilled in the art. It is, therefore, to be understood that the appended claims are intended to cover all such modifications and changes as fall within the true spirit of the embodiments of the invention.

What is claimed is:

1. An apparatus, comprising:

a keyboard without a key for a spacebar;

a trackpad, wherein any portion of the trackpad is configurable to function as the spacebar; and

a processor, wherein the processor is operably connected to the keyboard and the trackpad and the processor is configured to:

determine if an input to the trackpad includes a key press motion or a sliding motion,

responsive to determining the input is a key press motion, register the input as a spacebar keystroke, and

responsive to determining the input is a sliding motion, register the input as a tracking gesture.

2. The apparatus of claim **1** wherein a portion of the trackpad extends into a region for the spacebar on the keyboard and the portion of the trackpad is configured to function as the spacebar.

3. The apparatus of claim **1** wherein a top portion of the trackpad is profiled to simulate a shape of the spacebar.

4. The apparatus of claim **1** wherein a top portion of the trackpad extends into a region of the keyboard for the spacebar and comprises a switch set that is configured to function as the spacebar.

5. The apparatus of claim **1** wherein a bottom edge of the trackpad comprises a first switch that is configured to function as a left mouse button and a second switch that is configured to function as a right mouse button.

6. The apparatus of claim **1** wherein the trackpad further comprises one or more spring mechanisms.

7. The apparatus of claim **6** wherein the one or more spring mechanisms are positioned beneath a portion of the trackpad that is configured to function as the spacebar.

8. The apparatus of claim **1** wherein the trackpad further comprises a boundary delineating a top portion of the trackpad from a bottom portion of the trackpad.

9. The apparatus of claim **8** wherein the boundary comprises a visual indicator.

10. The apparatus of claim **8** wherein the boundary comprises a tactile indicator.

11. The apparatus of claim **8** wherein the boundary comprises a shelf.

12. The apparatus of claim **8** wherein the boundary comprises a ridge.

13. The apparatus of claim **8** wherein the boundary comprises a groove.

14. The apparatus of claim **1** wherein the processor is configured to:

determine if the input to the trackpad includes a tap motion, and

responsive to determining the input is a tap motion, register the input as a mouse click.

15. The apparatus of claim **14** further comprising a keyboard controller module and a trackpad controller module, wherein the keyboard is connected to the keyboard controller module and the trackpad is connected to the trackpad controller module.

16. An apparatus, comprising:

a keyboard including a spacebar, wherein the any portion of the spacebar is configurable to function as a trackpad; and

a processor, wherein the processor is operably connected to the keyboard and the processor is configured to:

determine if an input to the spacebar includes a key press motion or a sliding motion,

responsive to determining the input is a key press motion, register the input as a spacebar keystroke, and

responsive to determining the input is a sliding motion, register the input as a tracking gesture.

17. The apparatus of claim **16** wherein the processor is configured to:

determine if the input to the spacebar includes a tap motion, and

responsive to determining the input is a tap motion, register the input as a mouse click.

18. A method including executing instructions recorded on a non-transitory computer-readable storage media using at least one processor, the method comprising:

obtaining an input on a device from a user via a trackpad, wherein the device includes a keyboard without a key for a spacebar and any portion of the trackpad is configurable to function as the spacebar;

determining if the trackpad input includes a key press motion or a sliding motion;

responsive to determining the trackpad input is a key press motion, registering the trackpad input as a spacebar keystroke; and

responsive to determining the trackpad input is a sliding motion, registering the trackpad input as a trackpad gesture.

19. The method of claim **18** wherein the trackpad gesture comprises a tracking gesture.

20. The method of claim **18** wherein the trackpad gesture comprises a click gesture.

21. The method of claim **18**, further comprising:

determining a context of the trackpad input including determining whether the trackpad input contacted a spacebar region of the trackpad; and

registering the trackpad input as a spacebar keystroke based at least in part on the determined context of the trackpad input.

22. The method of claim **18**, further comprising:

determining a context of the trackpad input including determining whether the trackpad input included a tap motion; and

registering the trackpad input as a click gesture based at least in part on the determined context of the trackpad input.

23. The method of claim **18**, further comprising:

determining a context of the trackpad input including determining whether the trackpad input activated a spring mechanism in the trackpad; and

registering the trackpad input as a spacebar keystroke based at least in part on the determined context.

24. The method of claim **18**, further comprising:

determining a context of the trackpad input including determining whether the trackpad input included a continuous pressure on the trackpad; and

registering the trackpad input as a trackpad gesture based at least in part on the determined context.

25. The method of claim **18**, further comprising:

determining a context of the trackpad input including determining an application context of the trackpad input; and

registering the trackpad input as a spacebar keystroke or a trackpad gesture based at least in part on the determined application context.

26. The method of claim **18**, further comprising:

determining a context of the trackpad input including determining a text entry context of the trackpad input; and

registering the trackpad input as a spacebar keystroke or a trackpad gesture based at least in part on the determined text entry context.

27. The method of claim **18**, further comprising:

determining a context of the trackpad input including determining a duration of the trackpad input; and

registering the trackpad input as a spacebar keystroke or a trackpad gesture based at least in part on the determined duration of the trackpad input.

28. A recordable storage device having recorded and stored thereon instructions that, when executed, perform the actions of:

obtaining an input on a device from a user via a trackpad, wherein the device includes a keyboard without a key for a spacebar and any portion of the trackpad is configurable to function as the spacebar;

determining if the trackpad input includes a key press motion or a sliding motion;

responsive to determining the trackpad input is a key press motion, registering the trackpad input as a spacebar keystroke; and

responsive to determining the trackpad input is a sliding motion, registering the trackpad input as a trackpad gesture.

29. The recordable storage device of claim 28, further comprising:

determining a context of the trackpad input including determining whether the trackpad input contacted a spacebar region of the trackpad; and

registering the trackpad input as a spacebar keystroke based at least in part of the determined context of the trackpad input.

30. The recordable storage device of claim 28, further comprising:

determining a context of the trackpad input including determining whether the trackpad input activated a spring mechanism in the trackpad; and

registering the trackpad input as a spacebar keystroke based at least in part on the determined context.

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