

screen that provides a controlled electric field at the UI display 120 that is triggered by an electrical interference, and the like. As such, the user-initiated actuation 275 at the UI display 120 can generate two inputs; the request 230 from the flexible touchpad 115 and the indication of actuation 235 from the user-input elements 110 (presumably in the active condition).

[0054] With reference to FIG. 3, a flow diagram is illustrated that shows an overall method 300 for manipulating user-input elements to manage outwardly-extending protrusions expressed at a flexible touchpad incorporated in the touchscreen device, in accordance with an embodiment of the present invention. Initially, a request to manipulate outwardly-extending protrusions expressed by the flexible touchpad is received, as indicated at block 305. As indicated at block 310, the requests are processed upon executing a manipulation procedure (e.g., utilizing the processing unit 205 of FIG. 2). Generally, the manipulation procedure includes, but is not limited to, the following procedures: accessing configuration settings based on processing the requests (see block 315); identifying the configuration settings as indicating an adjustment of a portion of user-input elements (see block 320); and manipulating the portion of the user input elements in accordance with the configuration settings, thereby affecting the expression of outwardly-extending protrusions (see block 325). Manipulating the portion of user-input elements may include the steps of releasing the portion of the user-input elements to an extended orientation (see block 330), where the released portions are set to an active condition, and retaining the remainder of the user-input-elements in a retracted orientation (see block 335), where the retracted remainder is set to an idle condition.

[0055] As indicated at block 340, a UI display is rendered at the flexible touchpad according to the request. In a particular instance, rendering includes, but is not limited to, the following procedures: extracting presentation data from the request (see block 345); communicating the presentation data to the flexible touchpad (see block 350); and rendering the UI display at the flexible touchpad utilizing the presentation data (see block 355). In an exemplary embodiment, rendering the UI display includes presenting characters associated with each of the outwardly-extending protrusions, thus, portraying the outwardly-extending protrusions as a physically-extending keypad where each of the characters indicates the key identity of the outwardly-extending protrusions.

[0056] With reference to FIG. 4, a flow diagram is illustrated that shows a method 400 manipulating a set of moveable pins to produce a physically-extending keypad, in accordance with an embodiment of the present invention. Initially, a request is received at a processing unit of a touchscreen device, as indicated at block 405. In one instance, receiving may include, but is not limited to, detecting a user-initiated input via one or more of a set of movable pins that reside in the active condition (see block 410), and detecting the user-initiated input as being associated with a predefined configuration (see block 415). In another instance, receiving may include, but is not limited to, monitoring operations performed by an application (see block 420), and identifying one of the operations as being associated with a predefined configuration of the set of moveable pins (see block 425). As indicated at block 430, a determination of whether to manipulate the physically-extending keypad to address the request is made. If manipulating the physically-extending keypad is an appropriate response to the request (see block 435), an indication to activate an electromechanical device (e.g., electro-

mechanical device 210 of FIG. 2) to adjust the physically-extending keypad consistent with the request is provided (see block 440). Conversely, if manipulating the physically-extending keypad is not an appropriate response to the request (see block 435), the present configuration of the physically-extending keypad is retained as it appears on the flexible touchpad of the touchscreen device (see block 445).

[0057] FIG. 5 is an exemplary physically-extending keypad accommodated on the touchscreen device 100 with an appearance that replicates an actual keyboard, in accordance with an embodiment of the present invention. In particular, this embodiment depicts an email mode of the touchscreen device 100 that is controlled by the configuration settings and presentation data communicated from an email application. Initially, outwardly-extending protrusions 125 form a physically-extending keyboard 510 that provides the appearance of an actual keyboard. In this way, each of the outwardly-extending protrusions 125 simulates a key of the physically-extending keyboard 510 and each provides a responsive tactile feedback in reaction to a user-initiated actuation. Alphanumeric characters 530 are displayed in association with each of the outwardly-extending protrusions 125, in accordance with the presentation data, thereby indicating the key function mapped to each of the outwardly-extending protrusions 125. Similarly, additional protrusions created by extended user-input elements are located at particular outwardly-extending protrusions 125 (e.g., “F” key, “J” key, or other dock position keys) to better assist in indicating the identity of the outwardly-extending protrusions 125 and to assist in simulating the appearance of an actual keyboard.

[0058] Additionally, the alphanumeric characters 530 alert the user to which of the user-input elements, which generate the outwardly-extending protrusions 125 in this instance, are set to the active condition. Alternatively, the remainder of the user-input elements that are not activated, or in an idle condition, are not as noticeable to the user. That is, the outwardly-extending protrusions 125 and/or the alphanumeric characters 530 emphasize the user-input elements in the active condition while suppressing the presence of those in the idle condition. Those of skill in the telecommunications industry will understand or appreciate that other methods of calling attention to the active user-input elements may be used and that embodiments of the invention are not limited to those shown and described.

[0059] In operation, a user is permitted to type at the physically-extending keyboard 510, which provides a tactile feedback indicating to the user that s/he has satisfactorily actuated a simulated key. Upon actuation, the command mapped to a simulated key is executed. In one instance, the command selects an alphanumeric character to be included in the text of an email message 520.

[0060] The email message 520 may also be affected by touch-sensitive keys 515. These touch sensitive keys 515 detect a user-initiated actuation via a capacitive/resistive touchscreen incorporated within the flexible touchpad, via user-input elements in the retracted orientation but in the active condition, or a combination thereof. The touch-sensitive keys 515, the email message 520, and the physically-extending keyboard 510 are located within the UI display 120. Accordingly, the UI display 120 is completely reconfigurable to render multimedia content, to provide touch-sensitive keys 515, and/or to provide outwardly-extending protrusions 125 that provide tactile feedback at any location on the UI display 120.