

ment that is flexible to generate a variety of tactile feedbacks to the user based on configurations settings from a variety of applications.

[0069] Many different arrangements of the various components depicted, as well as components not shown, are possible without departing from the spirit and scope of the present invention. Embodiments of the present invention have been described with the intent to be illustrative rather than restrictive. Alternative embodiments will become apparent to those skilled in the art that do not depart from its scope.

[0070] It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and sub-combinations and are contemplated within the scope of the claims. Not all steps listed in the various figures need be carried out in the specific order described.

The invention claimed is:

1. One or more computer-readable media having computer-executable instructions embodied thereon that, when executed, perform a method for manipulating a set of moveable pins to produce a physically-extending keypad on a touchscreen device, the method comprising:

receiving a request at a processing unit of the touchscreen device;

determining whether manipulating the physically-extending keypad is appropriate to address the request; and

if appropriate, providing an indication to activate an electromechanical device to adjust a portion of the set of moveable pins to an extended orientation,

wherein the portion of the set of moveable pins in the extended orientation influences an appearance of a flexible touchpad incorporated within the touchscreen device, and

wherein, when in the extended orientation, the portion of the set of moveable pins produces the physically-extending keypad consistent with the request.

2. The computer-readable media of claim 1, wherein receiving a request comprises:

monitoring operations performed by an application; and identifying one of the operations as being associated with a predefined configuration of the set of moveable pins; wherein the predefined configuration

specifies the portion of the set of moveable pins to adjust to the extended orientation and which of the set of moveable pins to set to an active condition.

3. The computer-readable media of claim 2, wherein receiving a request comprises:

detecting a user-initiated input via one or more of the set of moveable pins in the active condition; and

identifying the user-initiated input as being associated with a predefined configuration that is distinct from the predefined configuration to which the set of moveable pins is adjusted.

4. The computer-readable media of claim 2, wherein receiving the user-initiated input comprises receiving an indication to execute a key-entry function, and wherein the predefined configuration of the physically-extending keypad is an alphanumeric pattern of outwardly-extending protrusions expressed at the flexible touchpad.

5. The computer-readable media of claim 1, wherein determining whether manipulating the physically-extending keypad is appropriate to address the request comprises identifying the request as a call to present content on the flexible touchscreen as outwardly-extending protrusions.

6. A touchscreen device for manipulating one or more user-input elements according to configuration settings, the touchscreen device comprising:

a processing unit for communicating presentation data to a flexible touchpad and for executing a manipulation procedure comprising:

(1) receiving one or more requests; and

(2) accessing configuration settings based on processing the one or more requests;

an electromechanical device for manipulating a portion of one or more user-input elements to an extended orientation and a retracted orientation consistent with the configuration settings;

the one or more user-input elements for providing a tactile feedback in the extended orientation when actuated by a user; and

the flexible touchpad for rendering a user-interface (UI) display that is controlled, in part, by the presentation data, and for expressing outwardly-extending protrusions generated by the manipulation of the one or more user-input elements.

7. The touchscreen device of claim 6, wherein the one or more user-input elements are the set of moveable pins that functions as touch-sensitive keys, wherein the set of moveable pins is disposed in substantial perpendicular-spaced relation to the flexible touchpad.

8. The touchscreen device of claim 6, wherein the one or more user-input elements employ a spring-loaded mechanism to provide the tactile feedback that imitates a click generated upon pressing a key on a normal electromechanical keyboard.

9. The touchscreen device of claim 6, wherein the flexible touchpad is a self-illuminating film that projects the UI display without the assistance of backlighting, wherein the self-illuminating film substantially overlays the one or more user-input elements and is in partial communicative contact therewith.

10. The touchscreen device of claim 6, wherein the flexible touchpad is an organic light-emitting diode (OLED).

11. The touchscreen device of claim 6, further comprising an application configured for providing the one or more requests to the processing unit upon executing an operation of the application; wherein the one or more requests are associated with particular presentation data and particular configuration settings that correspond to the operation of the application.

12. The touchscreen device of claim 6, wherein the flexible touchpad is further configured for:

expressing the outwardly-extending protrusions as a replication of a physically-extending keypad; and

displaying at least one character in association with each of the outwardly-extending protrusions in accordance with the configuration settings.

13. The touchscreen device of claim 6, wherein the electromechanical device is further configured for manipulating the portion of the one or more user-input elements to the extended orientation in a pattern that is expressed by the outwardly-extending protrusions at the flexible touchpad, wherein the pattern is a common physically-extending keypad such that an identity of each of the outwardly-extending protrusions is intuitive to the user, and wherein the presentation data directs the flexible touchpad to resist displaying characters in association with the outwardly-extending protrusions.