

predefined configuration may include a standard alphanumeric keypad (see FIGS. 5 and 7), a dial pad (see FIG. 6), or moveable protrusions that act in conjunction with video media (see FIGS. 8 and 9). In one instance, the configuration settings may influence which outwardly-extending protrusions are statically expressed on the flexible touchpad (see FIGS. 5-7). In other instances, the configuration settings may control the outwardly-extending protrusions in conjunction with video media (see FIGS. 8 and 9), or independent of the video media (e.g., in response to user-initiated actuation of the flexible touchpad).

[0031] In an exemplary embodiment, the configuration settings are related to a particular mode that is initiated in accordance with the request. The mode determines which of the user-input elements are set to an active condition and which are set to an idle condition. Generally, in the active condition, the sensing elements employed on active user-input elements are instantiated to communicate indications of user actuations to the processing unit. Alternatively, in the idle condition, the sensing elements employed on idle user-input elements are inactive and resist communicating user actuations thereof to the processing unit. These modes may be either independent of the positional state of the user-input elements (e.g., Braille expressed by the extended and retracted user-input elements in FIG. 7 is not in the active condition; all user-input elements are in the active mode in FIG. 9), or corresponding to the positional state of the user-input elements (e.g., the extended “key-style” user-input elements are in the active condition and the retracted user-input elements are in the idle condition in FIGS. 5-7).

[0032] A device for manipulating user-input elements by processing a request will now be described with reference to the accompanying drawings. The drawings and the associated descriptions are provided to illustrate embodiments of the present invention and not to limit the scope thereof. Reference in the specification to an “embodiment” is intended to indicate that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the invention. Further, the appearance of the phrase “in one embodiment” in various places in the specification are not necessarily all referring to the same embodiment.

[0033] Referring to the drawings in general, and initially to FIG. 1 in particular, a touchscreen device 100 with tactile feedback utility will now be described. Initially, an exemplary set of user-input elements 110 accommodated on a touchscreen device 100 with a portion of the user-input elements 110 adjusted to an extended orientation 116 is shown, in accordance with an embodiment of the present invention. Additionally, in the embodiment illustrated, the touchscreen device 100 employs few actual buttons 130 but relies on a large screen having an expansive UI display 120 area as the primary source for user-initiated input. As such, the touchscreen device 100 offers the flexibility of playing video and other multimedia content on the entire UI display 120 as well as providing text-entry functionality via outwardly-extending protrusions 125, or “keys,” generated by the user-input elements 110 adjusted to the extended orientation 116.

[0034] Turning now to FIG. 2, it should be noted that throughout the drawings, reference numerals are reused to indicate correspondence between referenced elements. A schematic diagram 200 depicting components of the touchscreen device 100 for use in implementing embodiments of the present invention is illustrated in FIG. 2 and will be

described in conjunction with FIG. 1. The schematic diagram 100 includes, in one embodiment, a processing unit 205, an electromechanical device 210, the user-input elements 110, a flexible touchpad 115, an application 215, and a data store 220.

[0035] The application 215 and the data store 220 are positioned both within and outside the touch-screen device 100 to indicate that the actual location of the application 215 and/or the data store 220 may be local to, or remote from the touch-screen device 100. For instance, the data store 220 may be housed in a remote server (not shown) and/or the application 215 may be a program presently running on a separate computing device (not shown) that is communicatively connected to the touchscreen device 100 via a network (which may actually be multiple networks). In embodiments, the data store 220 is configured to store information associated with the touchscreen device 100 and is searchable for such information. For instance, the information may include predefined configurations 260 that may be identified by interrogating the data store with one or more requests, as more fully discussed below.

[0036] The network may comprise a wired connection, a wireless connection, or a combination thereof. In addition, the network may include, without limitation, one or more wLANs and/or wWANs. Such networking environments are commonplace in offices, enterprise wide computer networks, intranets, and the Internet; thus, the network is not further described herein. In operation, the touchscreen device 100 receives communications from, and provides communications to, the data store 220 and/or the application 215 via the network, if either is embodied on a component external to the touchscreen device 100.

[0037] Although the various components of FIG. 2 are shown with lines for the sake of clarity, in reality, delineating various components is not so clear, and metaphorically, the lines would more accurately be grey or fuzzy. Further, although some components of FIG. 2 are depicted as single blocks, the depictions are exemplary in nature and in number and are not to be construed as limiting (e.g., although only one processing unit 205 is shown, many more may be operably coupled to the electromechanical device 210).

[0038] The touchscreen device 100 may be any type of device having communications capability. Touchscreen device 100 may be, or variously referred to as, a handheld device, mobile handset, consumer electronics device, cell phone, personal digital assistant (PDA) unit, and the like. In addition, each touchscreen device 100 may be a device that supports a flat-panel display that may or may not be provisioned with the network. By way of example only, the touchscreen device 100 may be a monitor adapted for mounting in an automobile headrest, a display screen on an oven, or any other electronic device equipped to present a UI display.

[0039] The processing unit 205, as shown in FIG. 2, may take the form of various types of processors that are commonly deployed in a personal computing device, a handheld device, a consumer electronic device, and the like. In embodiments, the processing unit 205 is generally configured to perform a manipulation procedure that includes, but is not limited to, the following: receiving a request 225 from the application 215, a request 230 from the flexible touchpad 115, and/or a request (arriving in the form of an indication of actuation 235) from the user-input elements 110; process the request to determine configuration settings 250; and convey the configuration settings 250 to the electromechanical