

HAPTIC USER INTERFACE

FIELD

[0001] The disclosed embodiments generally relate to user interfaces and more particularly to haptic user interfaces.

BACKGROUND

[0002] User interfaces for users to control electronic devices have developed continuously since the first electronic devices. Typically, displays are used for output and keypads are used for input, particularly in the case of portable electronic devices.

[0003] There is however a problem with portable electronic devices, in that a user may desire to interact with the device even when it is not feasible to see the display.

[0004] One known way to alleviate this problem is to use voice synthesis and voice recognition. Voice synthesis is when the device outputs data to the user via a speaker or a headphones. Voice recognition is when the device interprets voice commands from the user in order to receive user input. However, there are situations when the user desires to be quiet and still interact with the device.

[0005] Consequently, there is a need for an improved user interface.

SUMMARY

[0006] In view of the above, it would be advantageous to solve or at least reduce the problems discussed above.

[0007] According to a first aspect of the disclosed embodiments there has been provided a method comprising: generating at least one haptic user interface component using an array of haptic elements; detecting user input applied to at least one haptic element associated with one of the at least one haptic user interface component; and executing software code associated with activation of the one of the at least one user interface component.

[0008] Each of the at least one haptic user interface component may be generated with a geometrical configuration to represent the haptic user interface component in question.

[0009] The generating may involve generating a plurality of user interface components using the haptic element array, and wherein each of the plurality of user interface components may be associated with respective software code for controlling a media controller application.

[0010] The plurality of user interface components may be associated with the actions of: pausing media, playing media, increasing volume, decreasing volume, skip forward and skip back.

[0011] The generating may involve generating a user interface component associated with an alert.

[0012] The generating may involve generating user interface components associated with online activity monitoring.

[0013] A second aspect of the disclosed embodiment is an apparatus comprising: a controller; an array of haptic elements; wherein the controller is arranged to generate at least one haptic user interface component using the array of haptic elements; the controller is arranged to detect user input applied to at least one haptic element associated with the user interface component; and the controller is arranged to, as a response to the detection, execute software code associated with activation of the user interface component.

[0014] The apparatus may be comprised in a mobile communication terminal.

[0015] The controller may further be configured to generate each of the at least one haptic user interface component with a geometrical configuration to represent the haptic user interface component in question.

[0016] Each of the plurality of user interface components may be associated with respective software code for controlling a media controller application.

[0017] The plurality of user interface components may be associated with the actions of: pausing media, playing media, increasing volume, decreasing volume, skip forward and skip back.

[0018] A third aspect of the disclosed embodiments is an apparatus comprising: means for generating at least one haptic user interface component using an array of haptic elements; means for detecting user input applied to at least one haptic element associated with one of the at least one haptic user interface component; and means for executing software code associated with activation of the one of the at least one user interface component.

[0019] A fourth aspect of the disclosed embodiments is a computer program product comprising software instructions that, when executed in a controller capable of executing software instructions, performs the method according to the first aspect.

[0020] A fifth aspect of the disclosed embodiments is a user interface comprising: an array of haptic elements; wherein the user interface is arranged to generate at least one haptic user interface component using the array of haptic elements; the user interface is arranged to detect user input applied to at least one haptic element associated with the user interface component; and the user interface is arranged to, as a response to the detection, execute software code associated with activation of the user interface component.

[0021] Any feature of the first aspect may be applied to the second, third, fourth and the fifth aspects.

[0022] Other features and advantages of the disclosed embodiments will appear from the following detailed disclosure, from the attached dependent claims as well as from the drawings.

[0023] Generally, all terms used in the claims are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the [element, device, component, means, step, etc]" are to be interpreted openly as referring to at least one instance of the element, device, component, means, step, etc., unless explicitly stated otherwise. The steps of any method disclosed herein do not have to be performed in the exact order disclosed, unless explicitly stated.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The aspect of the disclosed embodiment will now be described in more detail, reference being made to the enclosed drawings, in which:

[0025] FIG. 1 is a schematic illustration of a cellular telecommunication system, as an example of an environment in which the disclosed embodiments may be applied.

[0026] FIGS. 2a-c are views illustrating a mobile terminal according to an embodiment.

[0027] FIG. 3 is a schematic block diagram representing an internal component, software and protocol structure of the mobile terminal shown in FIG. 2.

[0028] FIGS. 4a-b illustrate the use of a haptic user interface for media control that can be embodied in the mobile terminal of FIG. 2.