METHOD FOR ASSISTING USER INPUT TO A DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application No. 61/303,214 filed on 10 Feb. 2010, which is incorporated in their entirety by this reference.

[0002] This application is related to U.S. application Ser. No. 11/969,848 filed on 4 Jan. 2008 and entitled "System and Method for Raised Touch Screens," U.S. application Ser. No. 12/319,334 filed on 5 Jan. 2009 and entitled "User Interface System," U.S. application Ser. No. 12/652,704 filed on 5 Jan. 2010 and entitled "User Interface System," and U.S. application Ser. No. 12/830,426 filed on 5 Jul. 2010 and entitled "Method for Adjusting the User Interface of a Device," which are each incorporated in their entirety by this reference.

TECHNICAL FIELD

[0003] This invention relates generally to touch sensitive user interfaces, and more specifically to a new and useful system and method for selectively raising portions of touch sensitive displays.

BACKGROUND

[0004] A substantial number of mobile devices such as cameras, mobile phones, laptops, tablet computers, etc. currently available in the market include an input interface. Some include a touch sensitive interface that have input interfaces that adapt to the application of the device, such as the touch sensitive display as seen in the Apple iPhone product, while others provide static keyboards such as those seen on the RIM Blackberry devices that provide substantial tactile guidance for keyboard text and/or number input, but are more difficult to adapt to the application of the device. While the tactile guidance provided by a static keyboard may facilitate input, other than the placement of the key and the tactile feedback provided by each key as a user provides an input, there is substantially little additional tactile assistance provided to the user in providing user input. For example, because of the generally small size of handheld devices available, static keyboards that are provided on such devices may be condensed to have a fewer number of keys where each key may represent more than one letter, number and/or any other type of input or to have substantially little or no space in between keys, which may increase difficulty for the user in providing input. For example, a user may intend to input the letter "y" on a QWERTY keyboard interface provided on a mobile device, but because of the proximity of the key for "y" to the key for "t," the letter "t" was mistakenly inputted. To provide further assistance to text, number, or any others suitable type of input, a device may provide visual assistance in the form of predictive text. For example, as the user inputs the letter "t," the device may suggest the word "the" on a display as a predicted input and the user may select to input the word "the" without typing all three letters of the word. However, this method of assistance is primarily visual and not tactile. In particular, in the previous example where the letter "t" was mistakenly inputted, the predictive text function may predict words that start with the letter "t" as opposed to the letter "y," potentially necessitating the user to delete the inputted letter "t" and restart the entry process.

[0005] Thus, there is a need in the user interface field to create an improved text, number, and/or any other suitable type of input interface that assist the user in inputting their desired input. This invention provides such an improved input interface.

BRIEF DESCRIPTION OF THE FIGURES

[0006] FIG. **1** is a schematic representation of the method of the preferred embodiments.

[0007] FIG. **2** is a top view of the user interface system of a preferred embodiment applied to a device.

[0008] FIGS. **3***a* and **3***b* are cross-sectional views of the tactile interface layer of a first and second variation, respectively.

[0009] FIGS. **4***a*, **4***b*, and **4***c* are cross-sectional views illustrating the operation of a particular region of the surface of the tactile interface layer in accordance to the preferred embodiments.

[0010] FIG. **5** is a schematic representation of a multi-channel variation of the tactile interface layer with undeformed particular regions of the surface.

[0011] FIG. **6** is a schematic representation of a first type and a second type of tactilely distinguishable formation of a first variation.

[0012] FIG. **7** is a schematic representation of a first type and a second type of tactilely distinguishable formation of a second variation.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] The following description of the preferred embodiments of the invention is not intended to limit the invention to these preferred embodiments, but rather to enable any person skilled in the art to make and use this invention.

[0014] As shown in FIGS. **1** and **2**, the method **S100** of the preferred embodiments for adjusting a user interface for a device preferably includes providing a user interface to retrieve a user input Step **S110**, providing a tactile interface layer that defines a surface and includes a volume of fluid and a displacement device that manipulates the volume of fluid to deform a plurality of particular regions of the surface into tactilely distinguishable formations that each represent a key of a keyboard Step **S120**, allowing the user to provide text input through the keyboard Step **S130**, predicting a subsequent key input when a user provides an input through the keyboard Step **S140**, and manipulating the volume of fluid to deform the plurality of particular regions into one of at least two types of tactilely distinguishable formations: a first type for tactilely distinguishable formations that correspond to a predicted key input and a second type for tactilely distinguishable formations that correspond to an unpredicted key input Step **S150**.

[0015] As shown in FIG. **1**, after a user provides an input, a particular region that corresponds to a previously predicted key and is deformed into the first type of tactilely distinguishable formation may be transitioned into the second type of tactilely distinguishable formation (as shown for the middle particular region in FIG. **1**) when the key corresponding to the particular region is an unpredicted key, providing the user with a substantially detectible tactile difference between a predicted key and an unpredicted key. Similarly, a particular region that corresponds to a previously unpredicted key and is deformed into the second type of tactilely distinguishable