

[0055] Furthermore, the possible reactions, too, are somewhat limitless. Particularly where possible reactions are common possible reactions (such as, for example, a single activation or repeated activations), the reaction indication entry may be a link to a repository of such common possible reactions.

[0056] In some examples, the possible reactions and/or the predetermined behavioral characteristics may be user configurable, for example, using a menu or other utility. In some examples the possible reactions and/or the predetermined behavioral characteristics are automatically and dynamically configurable, based on the ongoing determined behavior of the user.

[0057] FIG. 9 illustrates a possible reaction is display of a menu 902. For example, the user may activate the “e” virtual key 906 with a particular behavior, and the reaction includes display of the menu 902. The menu 902, in the FIG. 9 illustration, includes additional virtual keys (e.g., 904a and 904b) corresponding to different forms of “e.” In some examples, actual display of the menu 902 is bypassed based on particular behaviors, although the virtual keys of the menu 902 are still present and able to be activated. For example, the user may nominally activate the “e” virtual key 906 with a “brush” gesture toward the additional virtual key 904 that is desired to be activated. The user would know the location of the additional virtual keys 904 based, for example, on previous use operation of the virtual keyboard. Not displaying the menu 902, a shortcut is provided for activating the additional virtual keys 904.

[0058] We now discuss, with reference to FIG. 7 and FIG. 8, an example where a combination of virtual keys is nominally activated. This example is similar in many ways to the example discussed above with reference to FIG. 5 and FIGS. 6A and 6B. Referring first to FIG. 7, the column 702 includes entries for combinations of nominally-activated virtual keys. For example, one such entry in column 702 may be for a virtual key corresponding to an “a” in combination with a virtual key corresponding to a “SHIFT.”

[0059] Each single possible combination of nominally-activated keys need not have a separate entry in the column 702. Where the combinations of predetermined behavioral characteristics in column 704 and the possible reactions in column 706 have common characteristics for plural combinations of nominally-activated virtual keys, the entries in column 704 and/or column 706 may be common to the plural combinations of predetermined behavioral characteristics, and parameterized if necessary to accommodate unique attributes associated with particular ones of the combinations of nominally-activated virtual keys.

[0060] Typically, many combinations of virtual keys do not have corresponding entries, such combinations typically resulting from inadvertent touching of the combinations of virtual keys. For a combination that does not have a corresponding entry, there would be no reaction to the combination. As another example, the such combinations may have corresponding entries, and the reaction would be “no reaction” or a reaction to generate an alert (e.g., a “beep” or other alert) to the user.

[0061] Referring to FIG. 8, the flowchart 800 illustrates an example of processing to determine a reaction with respect to particular user behavior relative to a combination of

nominally-activated virtual keys. While not so limited, the operation of the FIG. 8 processing is described with reference to the data structure illustrated in FIG. 7.

[0062] At step 802, the possible predetermined behavioral characteristics in column 704 for the particular combination of nominally-activated virtual keys (in column 702) are accessed. At step 804, the determined behavior (i.e., the behavior of the user’s touch in the spatial and/or time domain) is matched to the possible predetermined behavioral characteristics indicated in column 704. Then, in step 806, based on the matching, a reaction from column 706 is determined.

[0063] FIG. 10 illustrates an example of a display having virtual GUI items that are not virtual keys of a virtual keyboard. The general concepts discussed above with the specific example of virtual keys of a virtual keyboard are generally applicable to virtual GUI items. For example, less pressure and/or shorter duration of touching (e.g., by a finger 1002) may be required to activate the “keep” virtual GUI item 1004 than to activate the “delete” virtual GUI item 1006. In addition, the processing may be such that activation of some GUI items (such as the “delete” GUI item, for example) require additional behavior, such as a “wiggle” or other gesture, which would serve as additional confirmation that it is intended for the GUI item to be activated.

[0064] In some examples, the combination is “registered” only upon a particular condition, such as one virtual key of the combination being released.

[0065] In some examples, a “preview” function is provided. Thus, for example, before a virtual GUI item’s activation is committed, an indication of the activation is displayed. This may be particularly useful, for example, where the virtual GUI items are particularly small. FIG. 11 illustrates a finger 1102 whose touch may be activating either the “w” virtual key or the “e” virtual key. The temporary overlay 1108 displays an indication that the “e” virtual key is to-be activated, before the “e” virtual key activation is committed as typed text 1110. For example, the finger 1102 being lifted while a particular virtual key is indicated as being to be activated may cause the particular virtual key to actually be activated. In the FIG. 11 example, if the “e” virtual key is not to be activated, then the finger 1102 may be moved (e.g., without lifting it) on the touch screen to activate a different virtual key.

[0066] The various aspects, features, embodiments or implementations of the invention described above can be used alone or in various combinations. The invention is preferably implemented by software, but can also be implemented in hardware or a combination of hardware and software. The invention can also be embodied as computer readable code on a computer readable medium. The computer readable medium is any data storage device that can store data that can thereafter be read by a computer system. Examples of the computer readable medium include read-only memory, random-access memory, CD-ROMs, DVDs, magnetic tape, optical data storage devices, and carrier waves. The computer readable medium can also be distributed over network-coupled computer systems so that the computer readable code is stored and executed in a distributed fashion.

[0067] The advantages of the invention are numerous. Different embodiments or implementations may, but need