

keys. For example, row **408** is for one virtual key; row **410** is for another virtual key; and row **412** is for yet another virtual key. Column **402** includes indications of the virtual keys. Column **404** includes indications of predetermined behavioral characteristics for the virtual keys.

[**0042**] The predetermined behavioral characteristics are discussed in detail later. Broadly speaking, the predetermined behavioral characteristics are predetermined values of user's behavior (for example, specific values or ranges of values) in the spatial domain, the time domain or both. Using the **FIG. 3** example, predetermined behavioral characteristics indicated in column **404** may include, for example, specific values of inferred pressure of a user's touch of a touch screen to nominally activate a virtual key indicated in column **402**. As another example, the predetermined characteristics indicated in column **404** may include ranges of values of inferred pressure of a user's touch of the touch screen to nominally activate a virtual key indicated in column **402**.

[**0043**] The column **406** includes indications of reactions corresponding to the predetermined characteristics indicated in column **404**. That is, each reaction indicated in column **406** is an action to be taken (or, in some cases, not taken) when a determined behavior is matched to a particular predetermined behavioral characteristic in column **404**.

[**0044**] An example of processing to determine a reaction with respect to particular user behavior is now described with reference to the flowchart in **FIG. 5**. For ease of illustration, the operation of the **FIG. 5** example is discussed with respect to the **FIG. 4** table, and with respect to a particular nominally-activated key, although the method illustrated in the **FIG. 5** flowchart is not limited to being used with respect to a data structure of the form shown in **FIG. 4**.

[**0045**] Turning now to **FIG. 5**, at step **502**, the possible predetermined behavioral characteristics in column **404** for the particular nominally-activated virtual key (in column **402**) are accessed. For example, the particular nominally-activated key may be indicated in the entry where row **410** intersects with column **402**. The accessed possible predetermined behavioral characteristics would then be within the rectangle **414**.

[**0046**] At step **504**, 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 **404**. Then, in step **506**, based on the matching, a reaction from column **406** is determined. Using the example of row **410**, the determined reaction would be one of the reactions indicated within the rectangle **416**.

[**0047**] We now discuss in greater detail, with reference to **FIGS. 6A and 6B**, what may be the predetermined behavioral characteristics indicated, for example, in column **404** of the **FIG. 4** table and corresponding determined reactions. In the example of **FIGS. 6A and 6B**, the predetermined behavioral characteristics are in the time domain only and, specifically, are durations (here, ranges of durations) of the user's touch of the touch screen to nominally activate a virtual key.

[**0048**] **FIG. 6A** illustrates a timeline **650**, with increasing duration from left to right. Various durations are indicated on

the timeline, including "z", "x" and "y," from left to right. Reference numeral **651** indicates a duration less than "z." Reference numeral **652** indicates a duration greater than or equal to "z" and less than "x." Reference numeral **654** indicates a duration greater than or equal to "x" and less than "y." Finally, reference numeral **656** indicates a duration greater than or equal to

[**0049**] **FIG. 6B** illustrates a portion of a table similar to the table illustrated in **FIG. 4**. The column **602** includes the entry for one particular nominally-activated virtual key. The column **604** includes entries for the predetermined behavioral characteristics. In the **FIG. 6B** example, the column **604** includes entries for the durations **651**, **652**, **654** and **656** denoted on the **FIG. 6A** timeline **650**.

[**0050**] As discussed with reference to **FIG. 5**, the predetermined behavioral characteristics are matched to the determined behavior of the user's touch that nominally activates the virtual key. Based on the match, a reaction is determined. Column **606** of the **FIG. 6B** table portion includes indications of such reactions.

[**0051**] The reaction indications in column **606** are indicated by reference numerals **681**, **682**, **684** and **686**; corresponding to the predetermined behavioral characteristics indicated by reference numerals **651**, **652**, **654** and **656**. Referring to the specific reaction indications in column **606**, the reaction indication **681** indicates that the nominally-activated virtual key is to not, in fact, be activated. That is, the duration of the touching is too short to indicate an actual activation of the virtual key. Similarly, the reaction indication **686** indicates that the nominally-activated virtual key is to not be actually activated. In this case, the duration of the touching is too long, presumably corresponding to a resting finger or hand part and not to an intentional activation.

[**0052**] The remaining reaction indications are the reaction indication **682** and the reaction indication **684**. The reaction indication **682** indicates that the nominally-activated key is to be actually activated a single time. The reaction indication **684** indicates that the nominally-activated key is to be actually activated repeated times, with the number of times to repeat the actual activation a function of the duration of the touching.

[**0053**] **FIG. 6A** and **FIG. 6B** illustrate a simple example of determining reactions based on a determined behavior of the user in the time domain. As discussed above, reactions may be determined based on determined behaviors in the spatial domain, and based on a combination of determined behaviors in the spatial domain and in the time domain. The number and range of determined behaviors that may be used to determine reactions is limited, to some extent, only by what behavioral characteristics can be discerned or inferred.

[**0054**] A determined behavior in the spatial domain—*inferred pressure*—was discussed above with reference to **FIG. 3**. Other possible behaviors in the spatial domain include, for example, the area of the touch of a nominally-activated virtual key relative to the area of the touch of an adjacent such virtual key (i.e., there is not a "direct hit" of the user's finger in touching a virtual key). Possible behaviors that are in a combination of the spatial domain and the time domain are referred to, in some instances, as "gestures." See, for example, co-pending U.S. patent application Ser. No. 10/903,964, entitled *GESTURES FOR TOUCH SENSITIVE INPUT DEVICES* and filed Jul. 30, 2004.