and the left one is the ENTER. Since SPACE is more frequent then ENTER we would like to activate space with simple press hence the space zone **340** contain a small cycle around the initial contact point.

[**0080**] Key **128** is a 3-way key with two cursor movement command (forward and backwards) and the done command that close the keypad and return to the calling application. Since we want to give the user the sense of direction in the cursor movement functions the zones of those function **350**, **352** are restricted to sectors with direction towards the cursor movement direction. The 'Done' key terminate the keypad operation hence we do not what to get out on a simple press so Done zone **354** do not contains the central circle zone **358**. This zone is a forbidden zone hence simple press will not activate any of the function and error indication will be given to the user. Zone **356** is also forbidden zone since no function is associated with it.

[**0081**] In some cases one can implement a soft multi-function key without displaying multiple labels. Some examples are given in **FIG. 11**. For example, in **FIG. 11***a* a 2-way soft key is given. The only label is the lower a letter 'a' and two zones for that key is shown. By touching the key and move the finger/stylus upward upper case 'A' is be entered while simple touch or touch and move downward produce the lower case 'a'. In **FIG. 11***b* the same is done when the label on the key is upper case 'A'. In this case simple touch or touch with move upwards will produce the upper case 'A' while movement downwards will produce the lower case 'a'. In **FIG. 11***c* we have the key **110** introduced in the keypad shown in **FIG. 4**. In **FIG. 11***c* we added to the key 3 more zones by adding the arc **432**. In this way by drawing small trace you enter the lower case letter while by drawing trace longer then the arc radius the user can enter upper case letters.

[**0082**] While specific 2-way, 3-way, 4-way, 5-way and 6-way soft key implementations have been demonstrated, it will be clear to one ordinarily skilled in the art that one can modify those multi functional soft keys in several ways. Using the basic principal of having soft key selected by the initial contact point on any location on the key then selecting one of several options based on the trace, one can modify the shape of the key, the labeling logic, the numbers of functions, the definition of the decision zones and the decision logic in several different ways.

[**0083**] In **FIG. 12 a** general flow chart of the keypad controller logic is given.

[**0084**] The keypad controller waits for pen down event, i.e., a touch on the screen. When the touch occurred the keypad controller select the active key according to the initial contact point and then set a timer for 100 mil-second. If the function of the key is a displayed symbol on the display the keypad controller will display the current selection every 100 millisecond. The symbol displayed can be changed or even discarded every 100 millisecond. When the user pick up the pen/stylus/finger from the screen the last analysis of the trace is done and this analyze set the final displayed symbol or the activated function.

[**0085**] Finally, **FIGS. 13A and 13B** illustrate operation of the keypad of the present invention for selecting an "upward" function of a given key. The figures illustrate the equivalence of finger movement **(FIG. 13A)** and a rolling/tilting of the finger **(FIG. 13B)** to generate the required trace.

[**0086**] It will be appreciated that the above descriptions are intended only to serve as examples, and that many other embodiments are possible within the spirit and the scope of the present invention.

What is claimed is:

1. A multifunction keypad comprising:

(a) a touch-sensitive surface having defined thereon a plurality of regions designated as keys; and

(b) a processor associated with said touch-sensitive surface and configured to:

(i) identify a contact location at which an object comes into contact with said touch-sensitive surface,

(ii) determine a selected one of said keys corresponding to the one of said regions within which said contact location is located,

(iii) identify a direction of motion of the object across said touch-sensitive surface relative to said contact location, and

(iv) select in a manner conditional upon at least said direction of motion one of a plurality of functions associated with said selected key.

2. The keypad of claim 1, wherein said touch-sensitive surface is a touch-sensitive display screen.

3. The keypad of claim 1, wherein said processor is configured to select a first of said plurality of functions if said direction of motion falls within a first range of angles and a second of said plurality of functions if said direction of motion falls within a second range of angles non-overlapping with said first range of angles.

4. The keypad of claim 3, wherein said processor is configured not to select any of said plurality of functions if said direction of motion falls within a third range of angles interposed between said first range of angles and said second range of angles.

5. The keypad of claim 3, wherein said first range of angles is greater than said second range of angles.

6. The keypad of claim 1, wherein said processor is further configured to determine a length of motion of the object across said touch-sensitive surface relative to said contact location.

7. The keypad of claim 6, wherein said processor is configured to select a first of said plurality of functions if said length of motion falls within a first range of lengths in a given direction and a second of said plurality of functions if said length of motion falls within a second range of lengths in said given direction.

8. The keypad of claim 6, wherein said processor identifies a length of motion below a given value as a touch-and-release condition.

9. The keypad of claim 8, wherein said processor is configured not to select any of said plurality of functions on occurrence of a touch-and-release condition.

10. The keypad of claim 8, wherein said processor is configured to select a first of said plurality of functions if said direction of motion falls within a first range of angles, and wherein said processor is configured to select said first function additionally on occurrence of a touch-and-release condition.

11. The keypad of claim 8, wherein one of said plurality of functions is selected by said processor exclusively on occurrence of a touch-and-release condition.