[0292] Step **804** simply sets a flag which will indicate to decision diamond **798** during future scan cycles that typematic has already started for the element. Upon typematic initialization, step **810** sends out the key symbol for the first time to the host interface communication queue, along with any modifier symbols being held down by the opposite hand. Step **812** records the time the key symbol is sent for future reference by decision diamond **808**. Processing then returns to step **770** to await the next proximity image scan.

[0293] Until the finger lifts off or another taps asynchronously, processing will pass through decision diamond **798** to check whether the key symbol should be sent again. Step **806** computes the symbol repeat interval dynamically to be inversely proportional to finger proximity. Thus the key will repeat faster as the finger is pressed on the surface harder or a larger part of the fingertip touches the surface. This also reduces the chance that the user will cause more repeats than intended since as finger proximity begins to drop during liftoff the repeat interval becomes much longer. Decision diamond **808** checks whether the dynamic repeat interval since the last typematic symbol send has elapsed, and if necessary sends the symbol again in **810** and updates the typematic send time stamp **812**.

[0294] It is desirable to let the users rest the other fingers back onto the surface after typematic has initiated **804** and while typematic continues, but the user must do so without tapping. Decision diamond **805** causes typematic to be canceled and the typematic element deleted **778** if the user asynchronously taps another finger on the surface as if trying to hit another key. If this does not occur, decision diamond **182** will eventually cause deletion of the typematic element when its finger lifts off.

[0295] The typing recognition process described above thus allows the multi-touch surface to ergonomically emulate both the typing and hand resting capabilities of a standard mechanical keyboard. Crisp taps or impulsive presses on the surface generate key symbols as soon as the finger is released or decision diamond **792** verifies the impulse has peaked, ensuring prompt feedback to the user. Fingers intended to rest on the surface generate no keys as long as they are members of a synchronized finger press or release subset or are placed on the surface gently and remain there along with other fingers for a second or two. Once resting, fingers can be lifted and tapped or impulsively pressed on the surface to generate key symbols without having to lift other resting fingers. Typematic is initiated ether by impulsively pressing and maintaining distinguishable force on a key, or by holding a finger on a key while other fingers on the hand are lifted. Glancing motions of single fingers as they tap key regions are easily tolerated since most cursor manipulation must be initiated by synchronized slides of two or more fingers.

[0296] Other embodiments of the invention will be apparent to those skilled in the art from consideration of the specification and practice of the invention disclosed herein. It is intended that the specification and examples be considered as exemplary only, with a true scope and spirit of the invention being indicated by the following claims.

What is claimed is:

1. A method of interpreting the output of a touch sensor comprising the steps of:

a. receiving a set of contact data from a touch sensor, the touch sensor comprising a touch surface and a plurality of sensors distributed beneath the touch surface, each sensor represented by a sensor identification;

b. associating each sensor with one or more datum regarding the state of the sensor at a particular time;

c. creating groups of sensor identifications, each group representing sensors that correspond to a single hand part;

d. evaluating both sensor data associated with each group and stored data, to estimate path and contact information for each group;

e. associating each group with either a right hand or left hand;

f. associating each group with a specific hand part; and

g. storing a data structure comprising at least a portion of the information about each group.

2. The method of claim 1 wherein contact data is produced with respect to objects within the sensing range of the touch sensor, whether or not objects are touching the touch sensor.

3. The method of claim 1 wherein stored data comprises an information associated with sensors' states from a plurality of times prior to the particular time.

4. The method of claim 1 wherein hand parts comprise at least two of the following: index finger, middle finger, ring finger, pinky finger, inner palm heelheel, or outer palm heelheel.

5. The method of claim 1 comprising the further step of estimating the position of each hand.

6. The method of claim 5 wherein the step of creating groups of sensor identifications, each group representing sensors that correspond to a single hand part, incorporates the evaluation of prior hand position information.

7. The method of claim 5 wherein the step of associating each group with either a right hand or left hand, incorporates the evaluation of prior hand position information.

8. The method of claim 1 comprising the further step of associating each group with a data structure comprising information regarding the associated sensors.

9. The method of claim 1 wherein the path is an expression representing the movement of a particular hand part over time.

10. The method of claim 1 wherein the contact information is an indication regarding whether a particular hand part is touching the touch surface.

11. The method of claim 1 wherein the contact information is an indication regarding whether a particular hand part is within sensing range of the touch sensor.

12. A method of interpreting the output of a touch sensor comprising the steps of:

h. receiving a first set of contact data from a touch sensor at time t**1**, the touch sensor comprising a touch surface and a plurality of sensors distributed beneath the touch surface, each sensor represented by a sensor identification;

i. receiving a second set of contact data from the touch sensor at time t**2**;

j. receiving a third set of contact data from the touch sensor at time t**3**;