ment. As illustrated in **FIG. 19**, once reference fingers (reference keys **56**—'A, S, D, F, J, K, L, ;, and space) have been identified, the computing device will assign associated keys **(63)** for each reference key **(56)**. According to touch-typing convention, each finger may then be used to type a particular set of keys. The assigned sets of keys are graphically separated in **FIG. 19** with a dotted line **(62)**. According to the exemplary embodiment illustrated in **FIG. 19**, the little finger of the left hand would have the button 'A' as its reference key **(56)**, and buttons '', '1', 'tab', 'Q', 'caps', 'shift', 'Z', and 'ctrl' are its associated keys **(63)**. According to one exemplary embodiment, these keys can be differentiated by grouping with the same color on the display soft keyboard.

[0092] **FIG. 20A** illustrates key mapping dividing the individual keys by dotted line **(27)** on the sensing surface **(1)**. The white circles representing finger marks **(5)** in **FIG. 20A** are current fingertip positions of both hands **(55)** that are resting on the same sensing surface **(1)** of the input device **(53)**. The finger marks **(5)** illustrated in **FIG. 20A** are resting on reference keys **(56; FIG. 19)**, and are shown as highlighted buttons **(30)** that the operator would see on a soft keyboard **(35)** represented on the display screen. **FIG. 20A** to **20**D illustrates the dynamic button mapping that may occur when finger positions on the sensing surface **(1)** change. **FIG. 20B** illustrates that the left and right hands are not aligned. Accordingly, the key mapping positions change across the surface **(1)**. The finger marks **(5)** still rest on the reference keys that are 'A, S, D, F, and J, K, L, ;, space.'**FIG. 20C** illustrates the left hand fingers stretched apart while the right hand fingers are closed to each other. The keys mapping on the left zone stretches apart as shown in the figure, and the keys mapping on the right zone cram closer. As shown in **FIG. 20D**, the left hand fingers are not aligned on the sensing surface **(1)**, however, the finger marks still rest on the reference keys, causing each set of associate keys to change their positions. Regardless of the finger positioning, the associated keys for each finger set will always try to be the same distance apart on the sensing surface by measuring from the setting reference finger. According to one exemplary embodiment, the distance separating the associated keys is factory set to simulate the conventional keyboard size and may be adjusted depending on the size of the sensing surface **(1)** and the size of the operator's hands. Again, the actual positions of these keys are not shown on the display screen, unless set to do so. Also, the associated keys convention can be customized and regrouped as requested by the user.

[0093] The keys will be mapped on the sensing surface **(1)** based at least in part on the original location of the reference fingers. Overlapping keys' space will be divided equally to maximize each clashing key's area as seen in **FIG. 20C** on the right side of the sensing surface **(1)**. If the reference fingers are far apart causing gaps between a number of keys, these gap spaces will be divided equally to maximize each key's area as seen in **FIG. 20C** and **FIG. 20D** on the left side of the sensing surface **(1)**. Notice on **FIG. 20D** that in order to maximize each key's area, the dotted line **(27)** indicating the key's boundaries became slanted due to the keys' gap division.

[0094] According to one exemplary embodiment, the key mapping illustrated above may not necessarily result in rectangular key space divisions. Rather, the key space divisions may take on any number of geometric forms including, but in no way limited to, a number of radius or circular key space divisions, where the keys' area overlapping results will be divided in half.

[0095] According to one exemplary embodiment, an operator will be warned or will be automatically provided with the active space typing mode if any associated keys are highly overlapped. For example, if a number of fingers are not aligned in a reasonable manner for touch-typing (e.g. one finger rests below another), both hands are too close to each other, or the hands are too close to the edges. These occasions may cause keys missing on the sensing surface **1** as seen in **FIGS. 20B and 20D**. In **FIG. 20B**, on the right side of the sensing surface **(1)**, one can carefully observe that the entire row of special keys (F5 to F12) are missing. Similarly, in **FIG. 20D**, on the left side of the sensing surface **(1)**, 'tab', '', and the special keys (Esc to F4) are missing.

[0096] Two exemplary solutions that may remedy the missing keys condition include: first, if the hands/fingers move in any configurations that cause missing keys, automatically switch to the active space typing mode. Second, as illustrated in **FIG. 20E**, the sensing surface **(1)** may be labeled with resting regions **(54)** which indicate preferred areas where the reference fingers should be located. The resting regions **(54)** disposed on the sensing surface **(1)** ensure that the hands are not in a position likely to cause missing keys such as a position that is too close to the edges or too close to each other.

[0097] **FIG. 20F** illustrates an exemplary implementation where the fingers are rested on gray area **(34)** outside of the resting region **(54)**. Notice that the highlighted keys **(30)** are no longer the reference keys, but the number keys. In fact, when the condition illustrated in **FIG. 20F** occurs, the present system may operate in the active space typing mode, allowing the operator to rest fingers on the number row keys.

[0098] As shown in **FIGS. 18A, 18B**, and **20A**, by placing hand(s) in the resting position for touch-typing, with four fingers present from each hand (excluding the thumb), the computing device will automatically switch to the touch-type mode. If, however, the operator does not rest four fingers (excluding the thumb), thereby enabling the computing device to set the reference fingers (e.g. when only one or two fingers present), the active space typing mode is provided.

[0099] In the touch-typing mode, the left-hand will operate keys in column 'Caps Lock, A, S, D, F, G' and the right-hand will operate keys in column 'H, J, K, L, ;, 'Enter'. To actually type a letter, the 'virtual button,' as seen in FIGS. **2** to **4**, must be pressed. If the sensing surface is a hardboard type, a signal such as sound would indicate a S_n input.

[0100] When an operator rests four fingers thereby activating the touch type mode, the highlighted keys will be the reference keys. With the reference keys designated, the operator is now allowed to type by lifting the fingers as traditionally done or by just sliding fingertips. However, for sliding, at least one of the fingers, excluding the thumb in that hand, must be lifted off from the sensing surface **(1)**. Removal of at least one finger from the sensing surface is performed in order to freeze the keys mapped on the sensing surface **(1)**.

[0101] According to one exemplary embodiment, once the reference keys are set on either hand, left for example, lifting