

and are a part of the specification. The illustrated embodiments are merely examples of the present system and method and do not limit the scope thereof.

[0013] FIGS. 1A to 1D show a top view of a position touch-sensing surface according to one exemplary embodiment.

[0014] FIG. 2 illustrates a position touch-sensing surface with an air gap feature according to one exemplary embodiment.

[0015] FIGS. 3A to 3B illustrate a position touch-sensing surface with a rubber feet feature according to one exemplary embodiment.

[0016] FIGS. 4A to 4B illustrate rubber feet layer feature that causes the indentation to be formed in a certain shape according to one exemplary embodiment.

[0017] FIG. 5 shows schematic drawing for a touch pad with a virtual switch mechanism according to one exemplary embodiment.

[0018] FIGS. 6A to 6D illustrate an active space interaction mode in action according to one exemplary embodiment.

[0019] FIG. 7A shows flow chart logic for hand and finger detection in a touch-sensing device according to one exemplary embodiment.

[0020] FIG. 7B shows flow chart logic during an active space interaction mode according to one exemplary embodiment.

[0021] FIGS. 7C and 7D show flow chart logic during virtual touch-typing mode according to one exemplary embodiment.

[0022] FIG. 8 shows word processing with soft keyboard according to one exemplary embodiment.

[0023] FIGS. 9A to 9D show examples of various mobile phones with sensing surfaces according to one exemplary embodiment.

[0024] FIGS. 10A, 10B, and 10D show example of PDA designs according to one exemplary embodiment.

[0025] FIG. 10C shows the display screen from a touch screen PDA according to one exemplary embodiment.

[0026] FIG. 11 shows handheld PC with multi-touch sensing surface according to one exemplary embodiment.

[0027] FIG. 12 shows laptop PC with special multi-touch sensing surface according to one exemplary embodiment.

[0028] FIGS. 13A to 13F show multi-touch sensing devices for desktop PC according to one exemplary embodiment.

[0029] FIG. 14 illustrates hands resting for virtual touch-typing mode according to one exemplary embodiment.

[0030] FIG. 15 shows reference keys for each finger according to one exemplary embodiment.

[0031] FIG. 16 shows zoning concept for typewriter when both hands present according to one exemplary embodiment.

[0032] FIG. 17 illustrates that virtual touch-typing mode allows flexibility for operation according to one exemplary embodiment.

[0033] FIGS. 18A to 18C illustrate half zone configurations according to exemplary embodiments.

[0034] FIG. 19 illustrates finger zoning for associated keys according to one exemplary embodiment.

[0035] FIGS. 20A to 20D illustrate how key mapping changes according to the finger positions according to one exemplary embodiment.

[0036] FIG. 20E shows resting regions label on the sensing surface according to one exemplary embodiment.

[0037] FIG. 20F shows an incident when hands were rested outside the resting regions according to one exemplary embodiment.

[0038] FIG. 21 illustrates multiple pointers interaction mode in action according to one exemplary embodiment.

[0039] FIG. 22 illustrates example of pointer at various pressures according to one exemplary embodiment.

[0040] FIG. 23 illustrates mini-hand interaction mode in action according to one exemplary embodiment.

[0041] FIGS. 24A to 24D illustrate computer interaction that almost simulates real life according to one exemplary embodiment.

[0042] FIGS. 25A to 25D illustrate instances of chameleon cursor interaction mode according to one exemplary embodiment.

[0043] FIG. 26 illustrates using of tablet cursor interaction mode on a PDA.

[0044] Throughout the drawings, identical reference numbers designate similar, but not necessarily identical, elements.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

[0045] The present human computer interaction systems and methods incorporate the advantages of a number of proprietary types of position touch sensing input devices for optimal effects.

[0046] According to one exemplary embodiment, the present system and method provide a position touch-sensing surface, giving a reference for absolute coordinates (X, Y). This surface of the present system may be flat, rough, or have rounded features and can also be produced in any color, shape, or size to accommodate any number of individual computing devices. FIG. 1A illustrates a top view of an exemplary touch-sensing surface (1). According to one exemplary embodiment, the lower left corner of the surface is set as an absolute origin (2), where (X, Y) values equal (0, 0). The coordinate (3) is the position of a detected finger, which has the certain value of (X, Y). FIG. 1B shows a finger (4) on the sensing surface (1), that was detected as coordinate (3) in FIG. 1A. FIG. 1C illustrates the actual contact area (5) of the finger (4). Notice that the coordinate (3) corresponding to the position of the detected finger (4) is a centroid point of the contact area (5).