

VIRTUAL KEYBOARD WITH VISUALLY ENHANCED KEYS

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of the filing date under 35 USC 119(e) of the filing date of U.S. Provisional Application Ser. No. 61/111,891, filed Nov. 6, 2008, the contents of which are incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to devices having touch screens and which are operated by actuating virtual keys displayed on the screen.

BACKGROUND OF THE INVENTION

[0003] Electronic communications and data processing devices such as the iPhone (RTM) or HTC Diamond (RTM) and the like enjoy the benefits of miniaturization. The ability to reproduce images and to receive and transmit data forming images and messages is facilitated by miniaturized electronics. However, these devices also suffer from the drawback that miniaturization makes a keypad or touch screen which is necessary to control the device difficult to use. In particular, touch screens suffer from proximity of one switching area to an adjacent switching area and all but undefined borders separating adjacent switching areas. It is easy in a miniaturized touch screen for a person's fingers to intrude onto an adjacent switching area and inadvertently enter an unintended command.

[0004] There exists a need for a way of overcoming the problem of miniaturized switching areas in an electronic device of minimal and limited dimensions.

SUMMARY OF THE INVENTION

[0005] The present invention addresses the above articulated problem by enhancing the visual aspects of individual switches which appear on a touch screen. The device uses data processing apparatus and programming to predict selections which are subsequent to a first switching area selection, or alternatively, to offer a choice of switching areas which are rendered in more visually conspicuous fashion to the user to facilitate selection of the actual desired switching function.

[0006] The present invention firstly improves the ability to strike virtual keys with their fingers, which may by contrast be awkwardly large. The invention also highlights certain keys to assist in identifying and locating desired keys.

[0007] Illustratively, responsive to a switch command which designates a particular alphanumeric or other symbol, the device uses a logical choice or past experience to suggest subsequent symbols. The suggested symbols are rendered in a visually conspicuous manner, such as greater in size than unsuggested symbols. The more conspicuous suggested symbol is more readily recognized and actuated by the user.

[0008] It is therefore an object of the invention to address the problem of poorly discerned switching areas of touch screens of miniaturized electronic devices.

[0009] It is another object of the invention to make switching areas larger, even if only temporarily, to facilitate location and striking of desired switching areas.

[0010] It is another object to temporarily render individual switching areas more conspicuous to the user.

[0011] It is a further object of the invention to use prediction to limit the choices of switching areas to the user.

[0012] It is an object of the invention to provide improved elements and arrangements thereof by apparatus for the purposes described which is inexpensive, dependable, and fully effective in accomplishing its intended purposes.

[0013] These and other objects of the present invention will become readily apparent upon further review of the following specification and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Various objects, features, and attendant advantages of the present invention will become more fully appreciated as the same becomes better understood when considered in conjunction with the accompanying drawings, in which like reference characters designate the same or similar parts throughout the several views, and wherein:

[0015] FIG. 1 is a plan view of an electronic device having a touch screen, showing an initial condition of the screen.

[0016] FIG. 2 is a plan view of the screen of FIG. 1, wherein certain keys have become exaggerated in width.

[0017] FIG. 3 is a plan detail view showing only the top row of letters of FIG. 1, with certain keys shown both exaggerated in width and also having colored backgrounds.

[0018] FIG. 4 is a plan detail view similar to FIG. 3, but showing three different widths of keys.

[0019] FIG. 5 is a block diagram of steps of a method of practicing the invention, and is read starting at the upper left.

DETAILED DESCRIPTION

[0020] FIG. 1 of the drawings shows an electronic device 10 having a touch screen 12 on which are displayed keys 14. Keys 14 are the graphically represented identity of switching areas (not separately shown) of a touch screen, which operate in conventional fashion and need not be set forth in greater detail herein. Keys 14 may correspond for example to letters of the Roman alphabet, punctuation symbols, numerals, and other symbols which are typically used in textual communications. These letters, numerals, and symbols, which are well known and need not be set forth with every individual example being explicitly portrayed, may be arrayed according to a typical or standard "QWERTY" arrangement for example.

[0021] FIG. 1 depicts the initial condition of the array of keys 14, which is the array as it would appear prior to depressing any key 14. In the initial condition, all keys 14 may have a generally similar visual appearance as that refers to size, footprint, or dimensions of each key 14, font of the legend of the particular alphabetical, numeric, or symbolic character represented on each key 14, and color attributes of the background portion of each key 14.

[0022] The invention comes into play when any one key 14 is depressed. In response to depressing a key 14, the electronic device 10 introduces changes to the display of keys 14 in the following way. The electronic device 10 has circuitry, memory, and data processing capability (not shown per se) which responds to depressing of any one key 14 such that a suggestive response is triggered. The suggestive response suggests a selection of keys which would logically follow the initially depressed key. This may be accomplished in either of two principal separate ways, or by a combination of both. The first way is to establish, based on the first depressed key 14, a