

## ENTERING A CHARACTER INTO AN ELECTRONIC DEVICE

### FIELD OF THE INVENTION

[0001] The present invention relates generally to the field of character input into an electronic device. The invention is particularly useful for, but not necessarily limited to, entering phone numbers or short text messages into an electronic device having a relatively small touch screen.

### BACKGROUND OF THE INVENTION

[0002] Portable handheld electronic devices such as handheld wireless communications devices (e.g. cellphones) that are easy to transport are becoming commonplace. Such handheld electronic devices come in a variety of different form factors and support many features and functions.

[0003] For purposes of convenience there is a general trend toward miniaturization of many types of handheld electronic devices, specifically handheld wireless communication devices. Miniaturization generally makes it easier to carry the device, including, fitting the device into a user's pocket/purse or attaching the device to a user's belt. Furthermore, touch screens have been used on handheld electronic devices in which the keypad keys are displayed on the touch screen and allow a user to enter text and commands by simply use of a stylus "touching" an area of the screen displaying a key associated with a desired letter or command. Although touch screens are useful and offer ease of use, the trend towards miniaturization has resulted in smaller keys displayed thereon. This can make the keys difficult for the user to locate and select. For example in a QWERTY keyboard, fitting 50 keys onto a display area of typically 2.5 cm by 5 cm results in a key size of about 5 mm by 5 mm. The difficulty in seeing the keys and identifying the wanted key is exacerbated by movement of the user, for example whilst seated on a train or whilst the user moves about the environment. The portability of these devices encourages usage in such circumstances, however the above described method of entering data or commands makes this difficult to achieve satisfactorily.

[0004] A related problem is that the small keys are difficult for the user to touch or "click" with a stylus often resulting in the user clicking an adjacent key by mistake. This is both frustrating for the user, and requires additional keystrokes to recover from the mistake. As with the problem of identifying the keys in the first place, the problem of correctly selecting them with a stylus is exacerbated by user movement.

[0005] These problems have been addressed to some extent by enlarging the key, and surrounding key, that a user's stylus is located on, so that as the user scans across a small key keyboard, the keys surrounding the tip of the stylus enlarge to make it easier to see and select them. This mechanism is particularly useful if the user is familiar with the keyboard layout and can then go to the area of the screen where a wanted character key resides.

[0006] Another method of addressing these problems is with the use of predictive text entry which aims to reduce the number of key strokes required by the user, and hence the identification burden mentioned above as well as the number of mistakes in selecting keys. Predictive text entry uses well known algorithms to predict likely dictionary words based

on and containing a number of character keys selected by the user. The word or words are displayed in a different part of the display, and the user can select an appropriate word if it is the one he or she was intending to enter using the keyboard keys. This can reduce the number of keys the user needs to identify and select.

[0007] A variation of this method highlights keys on the keyboard which correspond to the next character in each predicted word. This makes it easier for the user to identify the most likely next keys on the keyboard. The algorithm predicts the most likely words the user is trying to input based on characters already entered by the user.

### SUMMARY OF THE INVENTION

[0008] In general terms in one aspect the present invention provides a method of entering a character into an electronic device such as a mobile phone, smart phone or Personal Digital Assistant (PDA). The method comprises receiving user input corresponding to one or more characters from a full set of characters, for example those from a QWERTY keyboard. These characters may be received by the user selecting a key from a full character set keyboard, a reduced character set keyboard, handwriting recognition, voice recognition, or a copy operation from another set of characters such as a word or part of a word from a previously sent SMS message or recently received email. A number of sequences of characters, such as allowed dictionary words, are predicted based on the received characters. A reduced character set keyboard is then displayed which includes keys corresponding to the next character in each predicted sequence of characters or words.

[0009] Throughout this specification the term "key" has the broad meaning of any key, button or actuator having a dedicated, variable or programmable function that is actuable by a user.

[0010] The reduced character set keyboard has keys corresponding to a sub-set of characters compared with the full character set. The keys are grouped together and can be arranged in different relative location or screen co-ordinate relationships compared with keys from a previous reduced character set keyboard or a full character set keyboard, in order to enhance certain data entry advantages as explained in more detail below. Alternatively or additionally, the keys are enlarged when compared with corresponding keys from a full character set keyboard.

[0011] The reduced number of keys and the grouping together of the keys makes it easier for the user to identify a wanted key because there are fewer keys to select from and they are concentrated in a smaller area of the key display region; thus the presentation of possible options is less confusing. Furthermore, the reduced number of keys compared with a full character set keyboard allows the reduced character set keys to be larger, and thus easier for the user to see and also to select with a stylus, or even a finger. Again this results in easier identification of the keys and reduced errors compared with trying to select the smaller keys. These advantages also allow greater use of data entry operations of this type to be carried out in circumstances where the user is moving.

[0012] Suitably the keys of the reduced character set keyboard are grouped together and arranged in spatial