

[0200] While the embodiment of the invention has been illustrated and described, as noted above, many changes can be made without departing from the spirit and scope of the invention. For example, the input path can be analyzed with other methods, the database of words can be organized in other ways, and the path-matching component can use other algorithms to identify the most likely candidate words. The various important insights embodied in the invention enable text to be input using a touch-screen keyboard rapidly and efficiently using a familiar and constant keyboard arrangement, without having to lift the stylus from the touch-screen between entering each letter, and without having to pause or perform any other action than trace out a path that passes through or near each letter in sequence. The embodiments of the present invention enable the method disclosed to detect and appropriately respond to characteristics of the user's input actions that naturally result of the way that users will tend to interact with the input system. For example, users in general will tend to enter input paths more rapidly for words that they have entered more often or with which they are more familiar. This corresponds to words that tend to be used with higher frequency. The embodiments of the method also not only allow for the fact that input paths that are entered with greater speed tend to be entered less accurately, but also take advantage of the contra positive, that input paths that are entered with lesser speed tend to be entered more accurately. Any type of touch-screen may be used by the system, and the input device may be a stylus, a finger, or any tool that works as an input device on the touch-sensitive screen. Thus the scope of the method should be determined by the appended claims and their legal equivalents, rather than by the specific aspects described above.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A method of inputting alphabetic text to an electronic device having a displayed keyboard, said displayed keyboard includes a set of keys wherein each letter of the alphabet is associated with at least one key, the method comprising:

recording input path data corresponding to a trace of an input path on said displayed keyboard, wherein said input path data include an initial path location, a sequence of one or more locations along which said input path continues, and a final path location at which said input path terminates,

identifying one or more words of a set of words stored in a database, one or more of said set of words associated with an indication of frequency of use, wherein one or more letters of each identified word are each associated with keys that are within a determined threshold distance of one or more determined points on said input path;

comparing said input path with one or more of said identified words, wherein comparing includes comparing a sequence of locations of the keys associated with the letters comprising the spelling of a word with said input path;

determining a first numerical score for one or more of the compared one or more words, wherein determining said numerical score for a word includes:

determining two or more points along said input path, including at least one point at or near said initial path location and one point at or near said final path location, that are designated as points of inflection;

for each of one or more of said keys associated with the letters comprising the spelling of said word, determining a corresponding matching point on said input path;

calculating said numerical score from a function of one or more of the distances from each determined matching point on said input path to the location of the corresponding matched key associated with a letter of the compared word;

determining one or more penalty amounts that are included in the calculation of said function when one or more of said designated points of inflection is not determined as a matching point for any key associated with a letter of the compared word;

determining one or more penalty amounts that are included in the calculation of said function for each instance in which no corresponding matching point is determined for one or more keys associated with letters of the compared word;

determining one or more penalty amounts that are included in the calculation of said function for each instance in which the order of the sequence along the input path of matching points does not correspond with the sequence of said associated letters in the spelling of the compared word;

and establishing a relative ranking of the words according to the numerical score and the frequency associated with the word.

2. The method of claim 1, further comprising generating one of the identified one or more words as text to be input.

3. The method of claim 2, further comprising offering one or more of the highest ranked words of said determined relative ranking to the user for selection of the word to be generated as text to be input.

4. The method of claim 1, wherein the location of each said determined point of inflection along the path is described by a first set of coordinates including a horizontal and a vertical coordinate, and wherein each said key is at a location described by a second set of said coordinates, and wherein said each said distance is calculated as a function of the difference between said first and second horizontal coordinates and of the difference between said first and second vertical coordinates, and wherein said difference between said first and second vertical coordinates is modified by multiplying said vertical coordinate difference by a determined factor in calculating said distance.

5. The method of claim 4, wherein when a distance is calculated between a key in the top row of alphabetic keys in said displayed keyboard and a point of inflection that is at a location with a vertical coordinate that places it above a threshold vertical coordinate height on said keyboard, said difference between said first and second vertical coordinates is not modified in calculating said distance.

6. The method of claim 4, wherein when a distance is calculated between a key in the bottom row of alphabetic keys in said displayed keyboard and a point of inflection that is at a location with a vertical coordinate that places it below