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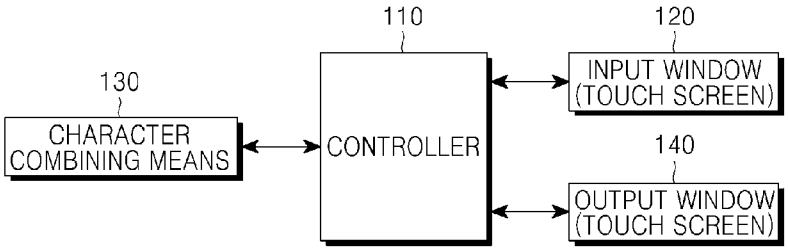
(54) Title: KOREAN CHARACTER INPUT APPARATUS AND METHOD USING TOUCH SCREEN

[Fig. 1]



(57) Abstract: A Korean character input apparatus using a touch screen includes an input window comprising a consonant input key, a " | " vowel input key provided to the right of the consonant input key, and a "—" vowel input key provided under the consonant input key, a character combining means by which when one of the " | " vowel input key and the "—" vowel input key of the input window is touch-selected, a consonant corresponding to the consonant input key provided to the left of the " | " vowel input key or provided above the "—" vowel input key is automatically selected as an initial consonant and thus is combined with a vowel corresponding to the touch-input vowel input key, an output window for displaying the composed Korean character, and a controller for controlling a touch input on the input window and an output of the composed Korean character on the output window.

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Description

Title of Invention: KOREAN CHARACTER INPUT APPARATUS AND METHOD USING TOUCH SCREEN

Technical Field

[1] The present invention relates to a Korean character input method and apparatus, and more particularly, to a Korean character input apparatus and method using a touch screen and a Korean character input system using a touch screen input means, by which the number of touches is innovatively reduced to facilitate input of Korean characters and a limited space of the touch screen can be effectively used.

Background Art

[2] The present invention relates to a Korean character input apparatus and method using a touch screen, by which the number of character input keys disposed on a touch screen used in an electronic device, such as a cellular phone, a Portable Media Player (PMP), a Mobile Internet Device (MID), or the like, is minimized and input of Korean characters is simplified and speeded up with a unique character input scheme.

[3] Recently, as electronic devices have been miniaturized and touch screens have risen as a core technology, a new character input scheme capable of replacing conventional input keys is demanded.

[4] In particular, Koreans usually Korean characters more frequently than English alphabets, and therefore, there is an urgent need for development of a compact character input apparatus provided with a keypad designed to facilitate input of Korean characters.

[5] In this regard, Korean Patent Publication No. 1999-65826 uses a phoneme combination scheme in which a character typing method can be learned easily, but a large number of typing times is required due to the composition of vowels.

[6] Korean Patent Publication No. 1999-52447 is based on visual reinterpretation in which Korean characters have to be reconstructed by reconstruction of consonants and on that account, this system falls beyond a basic algorithm of Korean. Moreover, a large number of typing times is required for input of consonants and it is not easy to learn the character typing method.

[7] Korean Patent Registration No. 159191 fails to reduce the number of times of typing keys for input of consonants and makes it difficult for users to understand the order of writing for input of compound vowels.

[8] That is, according to the conventional Korean character input methods, an excessively large number of typing times increase the possibility of erroneous input and require excessively much time in character input.

Disclosure of Invention

Technical Problem

[9] Accordingly, an aspect of the present invention is to provide a Korean character input apparatus using a touch screen, by which the number of character input keys disposed on a touch screen is remarkably reduced to simplify and speed up input of Korean characters.

[10] Another aspect of the present invention is to provide a Korean character input method using a touch screen, which uses the Korean character input apparatus using the touch screen.

[11] Moreover, another aspect of the present invention is to provide a Korean character input system using a touch screen input means to which the Korean character input apparatus using the touch screen is applied.

Solution to Problem

[12] According to an aspect of the present invention, there is provided a Korean character input apparatus for composing and completing a Korean character according to a user touch input with respect to consonant and vowel input keys. The Korean character input apparatus includes an input window comprising a consonant input key, a " ㅣ " vowel input key provided to the right of the consonant input key, and a "ㅡ" vowel input key provided under the consonant input key, a character combining means by which when one of the " ㅣ " vowel input key and the "ㅡ" vowel input key of the input window is touch-selected, a consonant corresponding to the consonant input key provided to the left of the " ㅣ " vowel input key or provided above the "ㅡ" vowel input key is automatically selected as an initial consonant and thus is combined with a vowel corresponding to the touch-input vowel input key, an output window for displaying the composed Korean character, and a controller for controlling a touch input on the input window and an output of the composed Korean character on the output window. When another consonant input key is touched and selected after the vowel input key is input, the character combining means combines a consonant corresponding to the touch-selected consonant input key with the composed Korean character as a final consonant of the Korean character. A plurality of consonant input keys are provided, each of which comprises corresponding " ㅣ " vowel input key and "ㅡ" vowel input key, and a plurality of " ㅣ " vowel input keys and "ㅡ" vowel input keys are connected with each other to form a grid structure. A vowel type of the vowel corresponding to the touch-input vowel input key is determined by a dragging gesture continuing from the vowel input key. In an embodiment of the present invention, the vowel corresponding to the touch-input vowel input key is determined as an input vowel if there is no dragging gesture made from the touch of the vowel input key, and

if there is a dragging gesture from the touch of the vowel input key, the input vowel is determined according to a combination of the corresponding vowel and a dragging pattern. In another embodiment of the present invention, a vowel type of the vowel corresponding to the touch-input vowel input key is determined according to a region where a user's touch of the vowel input key is stopped.

[13] In another embodiment of the present invention, if a dragging gesture made from the touch of the vowel input key extends to another vowel input key, the input vowel is determined according to a combination of the corresponding vowel, a dragging pattern, and a vowel corresponding to the another vowel input key. If a dragging gesture made form the vowel input key is recognized as a single-touch dragging gesture, it is recognized as a pure-vowel input, and if the dragging gesture is recognized as multi-touch dragging gesture, it is recognized as a compound-vowel input, thus composing the Korean character. When a dragging direction is determined by the single-touch dragging gesture from the vowel input key, the dragging gesture is recognized as an input of a pure vowel "ㅏ", "ㅓ", "ㅗ", or "ㅜ", and when the dragging direction is determined by the multi-touch dragging gesture, the dragging gesture is recognized as an input of a compound vowel "ㅑ", "ㅕ", "ㅛ", or "ㅠ", thus composing the Korean character. The present invention also provides a touch-screen based electronic device including the foregoing Korean character input apparatus.

[14] According to an aspect of the present invention, there is provided a Korean character input method based on combinations of consonants and vowels. The Korean character input method includes, by touch-selecting one of a "ㅣ" vowel input key provided to the right of a consonant input key and a "ㅡ" vowel input key provided under the consonant input key, automatically selecting a consonant corresponding to the consonant input key as an initial consonant of a Korean syllable, and determining an input vowel according to a dragging gesture continuing from the touch-selected vowel input key. The present invention also provides a Korean character input method based on combinations of consonants and vowels, the Korean character input method including (a) by touch-selecting one of a "ㅣ" vowel input key provided to the right of a consonant input key and a "ㅡ" vowel input key provided under the consonant input key, automatically selecting a consonant corresponding to the consonant input key as an initial consonant of a Korean syllable, (b) determining an input vowel according to a dragging gesture continuing from the touch-selected vowel input key, and (c) if another consonant input key is touch-selected after (b), recognizing a consonant corresponding to the touch-selected consonant input key as a final consonant and combining the consonant with a combination of the automatically selected consonant and the determined input vowel.

[15] A plurality of consonant input keys are provided, each of which comprises a "ㅣ"

vowel input key provided to the right of the consonant input key and a "ㅡ" vowel input key provided under the consonant input key, and a plurality of "ㅣ" vowel input keys and "ㅡ" vowel input keys are connected with each other to form a grid structure.

[16] In another embodiment of the present invention, the vowel corresponding to the touch-input vowel input key is determined as an input vowel if there is no dragging gesture made from the touch of the vowel input key, and if there is a dragging gesture from the touch of the vowel input key, the input vowel is determined according to a combination of the corresponding vowel and a dragging pattern, and if a dragging gesture made from the touch of the vowel input key extends to another vowel input key, the input vowel is determined according to a combination of the corresponding vowel, a dragging pattern, and a vowel corresponding to the another vowel input key.

[17] In another embodiment of the present invention, if a dragging gesture made form the vowel input key is recognized as a single-touch dragging gesture, it is recognized as a pure-vowel input, and if the dragging gesture is recognized as multi-touch dragging gesture, it is recognized as a compound-vowel input, thus composing the Korean character, and when a dragging direction is determined by the single-touch dragging gesture from the vowel input key, the dragging gesture is recognized as an input of a pure vowel "ㅏ", "ㅓ", "ㅗ", or "ㅜ", and when the dragging direction is determined by the multi-touch dragging gesture, the dragging gesture is recognized as an input of a compound vowel "ㅑ", "ㅕ", "ㅛ", or "ㅠ", thus composing the Korean character.

Advantageous Effects of Invention

[18] A Korean character input apparatus and method according to the present invention can remarkably reduce the number of character input keys disposed on a touch screen.

[19] Also, the Korean character input apparatus and method according to the present invention can remarkably improve speed of input of Korean characters.

Brief Description of Drawings

[20] The above and other features and advantages of exemplary embodiments of the present invention will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

[21] FIG. 1 is a block diagram of a Korean character input apparatus according to the present invention;

[22] FIG. 2 is a diagram illustrating an input window of a Korean character input apparatus according to the present invention;

[23] FIGs. 3a through 3e are diagrams illustrating a Korean character input scheme using a Korean character input apparatus and method according to the present invention;

[24] FIG. 4 is a diagram showing an example for inputting "뷰" according to another embodiment of the present invention;

[25] FIGs. 5a through 5d are diagrams showing examples for inputting syllables "예" and "왜" according to another embodiment of the present invention;

[26] FIG. 6 is a diagram illustrating a scheme for inputting a Korean syllable including a complex vowel according to another embodiment of the present invention;

[27] FIG. 7 is a diagram illustrating a Korean character input scheme according to another embodiment of the present invention; and

[28] FIG. 8 is a flowchart illustrating a Korean character input method according to an embodiment of the present invention.

Mode for the Invention

[29] The present invention composes and completes a Korean syllable by selecting a vowel input key, which corresponds to and is subordinate to a consonant input key corresponding to an initial consonant by a simple touch of the vowel input key, without separately touching the consonant input key. Hereinafter, exemplary embodiments of the present invention will be described in detail with reference to the accompanying drawings. However, the embodiments may be changed into various forms and the scope of the present invention is not limited to the foregoing embodiments. That is, the embodiments of the present invention are provided to fully describe the present invention to those of ordinary skill in the art.

[30] FIG. 1 is a block diagram of a Korean character input apparatus according to the present invention. Referring to FIG. 1, the Korean character input apparatus including a touch screen includes a controller 110, an input window 120 for inputting characters, a character combining means 130 for combining characters input through the touch screen 120 in a predetermined process, and an output window 140 for displaying the characters combined by the character combining means 130 under the control of the controller 110. The input window 120 and the output window 140 are provided in the touch screen.

[31] In particular, the present invention relates to the Korean character input apparatus in which the input window 120 includes a consonant input key, and a "ㅣ" vowel input key provided to the right of the consonant input key and a "ㅡ" vowel input key provided under the consonant input key. The present invention can implement an actual structure of Korean, and realize a syllable structure of Korean by a touch gesture with respect to a vowel input key without a separate touch of a consonant input key. Moreover, by disposing a vowel input key around a consonant input key rather than in a separate region, the use efficiency of a space of a touch screen can be minimized.

[32] FIG. 2 is a diagram illustrating the input window 120 of the Korean character input apparatus according to the present invention. Referring to FIG. 2, the input window 120 of the Korean character input apparatus includes a consonant input key 210, and a

" ㅣ " vowel input key 220 provided to the right of the consonant input key 210 and a "ㅡ" vowel input key 230 provided under the consonant input key 210. The vowel input keys 220 and 230 all correspond to the consonant input key 210. In other words, the present invention discloses a scheme in which in case of a touch input with respect to one of the vowel input keys 220 and 230, a consonant input key corresponding thereto is automatically selected, such that touch and selection of a consonant input key, especially corresponding to an initial consonant of a Korean syllable can be skipped.

[33] FIGs. 3a through 3d are diagrams illustrating a Korean character input scheme using a Korean character input apparatus and method according to the present invention.

[34] Referring to FIG. 3a, when a user selects one of the " ㅣ " vowel input key 310 and the "ㅡ" vowel input key corresponding to and being subordinate to a "ㅂ" consonant input key, a consonant "ㅂ" is automatically selected without a separate touch of the "ㅂ" consonant input key, and is combined with the selected vowel. In FIG. 3a, the " ㅣ " vowel input key 310 is touched by the user, such that "비" is displayed by a single touch.

[35] As a more advanced scheme, the present invention also discloses a scheme for selecting a vowel according to a dragging gesture with respect to a vowel input key.

[36] Referring to FIG. 3b, the user touches the " ㅣ " vowel input key 310 provided to the right of the consonant input key "ㅂ" and then makes a dragging gesture toward an area 320 of right side with respect to the " ㅣ " vowel input key 310 (as indicated by an arrow). In this case, the " ㅣ " vowel input key 310 and the dragging gesture (here, a dragging pattern corresponds to a dragging direction), such that a vowel " ㅏ " is determined. Consequently, the initially automatically selected consonant "ㅂ" and the vowel " ㅏ " are combined, and thus a Korean syllable "바" is displayed and output.

[37] Referring to FIG. 3c, when the user touches the " ㅣ " vowel input key and then 310 makes a dragging gesture towards an area 330 of the consonant input key "ㅂ", a vowel " ㅔ " is selected, such that a Korean syllable "베", which is a combination of "ㅂ" and " ㅔ ", is selected and displayed. However, according to the present invention, the user may also input "베" by first touching the consonant input key "ㅂ", instead of touching the " ㅣ " vowel input key 310, and then making a dragging gesture to the right to the " ㅣ " vowel input key 310. Also in this case, a consonant is determined by an initially touched vowel input key, but a consonant and a vowel may be selected and input at the same time.

[38] That is, in the Korean character input scheme according to the present invention, a consonant is selected by an input vowel, and a line generated and recognized by a dragging pattern, i.e., a dragging gesture, connected from the vowel (herein, the gesture line corresponds to a trace of the gesture and means a connecting line

continuing between a dragging start touch point and a dragging end touch point) is combined with the vowel, thus determining a final input vowel.

[39] The dragging gesture includes two points, a dragging start touch point and a dragging end touch point, and a connecting line therebetween, and thus the present invention discloses another embodiment in which a user touch gesture in the connecting line can be omitted in practice.

[40] FIG. 3d is a diagram illustrating a Korean character input scheme according to another embodiment of the present invention.

[41] Referring to FIG. 3d, an input window structured similarly with the foregoing embodiment is provided, but two regions are set between a " ㅣ " vowel input key provided to the right of a consonant input key " ㅇ " and an adjacent " ㅣ " vowel input key. In other words, between the " ㅣ " vowel input key (region (2)) and the " ㅣ " vowel input key (region (5)) are displayed two separate regions (3) and (4). That is, in the current embodiment, a vowel type is determined according to a region where the user, after touching a vowel input key, ends the touch, as will be described below.

[42] If the user touches the region (2) and then a region (1), it is recognized as if a dragging gesture is made from the region (2) to the region (1), such that "어" is input.

[43] If the user touches the region (2) and the region (3) consecutively, "아" is input; if the user touches the region (2) and the region (4), consecutively, the " ㅣ " vowel input key is combined with the adjacent " ㅣ " vowel input key such that "애" is input. Herein, the order of touches may be reversed.

[44] The present invention also discloses a scheme where when another consonant is selected after selection of the vowel, the selected consonant is selected and combined as a final consonant of a corresponding Korean syllable (refer to FIG. 3e). That is, in the present invention, since a vowel input key is first input to input another Korean syllable, then if after input of the vowel input key, a consonant input key, instead of another vowel input key, is input, a consonant corresponding to the input consonant input key is used as a final consonant of the Korean syllable.

[45] FIG. 3e is a diagram illustrating a scheme for inputting a Korean syllable including a final consonant according to an embodiment of the present invention.

[46] Referring to FIG. 3e, the user first touches the " ㅣ " vowel input key provided to the left of the consonant input key " ㅂ " and then makes a dragging gesture to the right as indicated by (1). Thus, with a single touch and a single dragging gesture, " ㅂ " and " ㅏ " are selected and combined with each other. Thereafter, the user touches another consonant input key " ㅇ " as indicated by (2), such that a Korean syllable "방" which uses " ㅇ " as a final consonant is completed and input. In other words, the present invention can input a Korean syllable including an initial consonant, a medial vowel, and a final consonant merely with two touches.

[47] Another embodiment of the present invention discloses a scheme for selecting and inputting a compound vowel, that is, "ㅑ", "ㅕ", "ㅠ", or "ㅛ", by multi-touches and a dragging gesture therefrom, rather than a single touch and a dragging gesture therefrom.

[48] FIG. 4 is a diagram illustrating an example for inputting "뷰" according to another embodiment of the present invention.

[49] Referring to FIG. 4, the user touches a "ㅡ" vowel input key 420 provided under "ㅂ", such that "ㅂ" is automatically selected as an initial consonant. Thereafter, the user makes a dragging gesture downward while keeping the touch. At this time, the dragging gesture is a multi-touch dragging gesture (that is, the dragging gesture is made while keeping the touch of two points as indicated by 420a and 420b), rather than a single-touch dragging gesture. Thus, a compound vowel "ㅜ", rather than a pure vowel "ㅜ", is selected.

[50] The present invention also provides a scheme for effectively inputting a compound vowel in which two vowels "ㅣ" are connected and used, for example, "ㅐ" or "ㅒ".

[51] FIGs. 5a through 5d are diagrams showing examples and an input window according to another embodiment of the present invention.

[52] Referring to FIG. 5a, an input window according to the present invention includes a plurality of consonant input keys, around each of which are disposed a plurality of vowel input keys described with reference to FIG. 2. In particular, in another embodiment of the present invention, the plurality of vowel input keys are connected with each other to form a so-called grid structure as shown in FIG. 5b. However, in spite of the grid structure where the vowel input keys are connected with each other, the vowel input keys are connected to each of the consonant input keys and thus the grid structure has an input pattern distinctive to each consonant input key region.

[53] FIG. 5c illustrates an example where a "ㅣ" vowel input key corresponding to a consonant input key "ㅇ" is input and a dragging gesture is made to another "ㅣ" vowel input key provided to the right of another consonant input key "ㄹ". That is, "ㅇ" is automatically selected by selection of an initial vowel input key, and "ㅐ" is selected by selection of "ㅣ", the single-touch dragging gesture (?) therefrom, and combination with another "ㅣ". Thus, a Korean syllable "애" is combined and completed.

[54] FIG. 5d illustrates an example where a "ㅣ" vowel input key corresponding to a consonant input key "ㅇ" is input and the multi-touch dragging gesture is made to another "ㅣ" vowel input key provided to the right of another consonant input key "ㄹ". That is, "ㅇ" is automatically selected by selection of an initial vowel input key, and "ㅐ" is selected by selection of "ㅣ", the multi-touch dragging gesture therefrom, and combination with another "ㅣ". Thus, a Korean syllable "애" is combined and

completed.

[55] FIG. 6 is a diagram illustrating a scheme for inputting a Korean syllable including a complex vowel according to another embodiment of the present invention.

[56] Referring to FIG. 6, the user touches a "ㅡ" vowel input key provided under a consonant input key "ㅈ", and makes a dragging gesture 610a downward, that is, down to a region of a consonant input key "ㄴ", and then a dragging gesture 610b to the right continuously from the dragging gesture 610a, to touch another " ㅣ " vowel input key. Thus, a compound vowel "ㅝ" which is a combination of "ㅜ" and " ㅕ " is selected as a vowel and is combined with the initially selected consonant "ㅈ", such that a Korean syllable "쥐" is input.

[57] As such, in a Korean character input apparatus and method according to the present invention, by a touch-based selection of a vowel input key, a consonant (i.e., an initial consonant of a Korean syllable) corresponding to the vowel input key is automatically selected and a vowel type of the Korean syllable is determined according to a dragging gesture from the touch. In other words, if there is no dragging gesture made from the touch, a vowel corresponding to the touched vowel input key is determined as a vowel; if there is a dragging gesture from the touch, a complex vowel is determined by the vowel input key and a dragging pattern. If another vowel input key (second vowel input key) is touched by the dragging gesture, a complex vowel is determined by the first selected vowel input key, the dragging pattern, and the second vowel input key, as described above with reference to FIG. 6.

[58] The present invention also provides a scheme for effectively inputting a compound vowel where two or more " ㅣ " or "ㅡ" are shown in a Korean syllable, but they are not connected with each other, for example, "ㅖ" or "ㅢ". To input, for example, "에", the " ㅣ " vowel input key provided to the right of the consonant input key " ㅇ " is selected and then a dragging gesture is made to the left to select " ㅓ ". In this state, however, another vowel " ㅣ " is difficult to add in the present invention. To solve this problem the present invention proposes independent " ㅣ " and "ㅡ" vowel input keys which are not associated with a consonant input key, that is, their inputs do not cause selection of the consonant input key.

[59] By using the independent " ㅣ " and "ㅡ" vowel input keys, a complex compound may be input. For example, to input the Korean syllable "쥐" shown in FIG. 6, the "ㅡ" vowel input key provided under the consonant input key "ㅈ" is touched and a dragging gesture is made downward, such that a Korean syllable "주" is input. In this state, by inputting the independent " ㅣ " vowel input key and making a dragging gesture to the left or from the left side with respect to the " ㅣ " vowel input key to the " ㅣ " vowel input key, a vowel " ㅓ " is combined with "주", such that the Korean syllable "쥐" is completed.

[60] FIG. 7 is a diagram illustrating a Korean character input scheme according to another embodiment of the present invention. Referring to FIG. 7, an input window according to the current embodiment includes independent " ㅣ " and "ㅡ" vowel input keys 710a and 710b in addition to consonant input keys and a plurality of " ㅣ " and "ㅡ" vowel input keys corresponding to each of the consonant input keys. For example, to input "에", the user selects the " ㅣ " vowel input key provided to the right of " ㅇ " and makes a dragging gesture to the left as indicated by (1). The user then touches the independent " ㅣ " vowel input key 710a as indicated by (2) to combine " ㅣ " with " ㅓ ", such that a complex compound " ㅔ " is input. To input "의" in this way, the user selects the " ㅣ " vowel input key provided to the right of " ㅇ " or the "ㅡ" vowel input key provided under " ㅇ " and selects the independent " ㅣ " vowel input key or the independent "ㅡ" vowel input key, thereby completing "의".

[61] By using the independent " ㅣ " and "ㅡ" vowel input keys, emoticon expressions using vowels, such as "ㅠㅠ" and "ㅜㅜ" are possible.

[62] FIG. 8 is a flowchart illustrating a Korean character input method according to an embodiment of the present invention.

[63] Referring to FIG. 8, a Korean character input method according to an embodiment of the present invention includes step S100 of touching a " ㅣ " vowel input key provided to the right of a consonant input key or a "ㅡ" vowel input key provided under the consonant input key to automatically select a consonant corresponding to the consonant input key, especially an initial consonant; and step S200 of determining a final vowel according to a dragging gesture from the selected vowel input key. Another embodiment of the present invention discloses a Korean character input method further including step S300 of inputting a final consonant after step S200, as shown in FIG. 3d. Automatic selection of a consonant according to the input of a vowel and a combination of the consonant and the vowel have already been described and thus will not be described in detail.

[64] The Korean character input apparatus and method according to the present invention can be applied to a touch screen of any touch screen-based electronic device such as a portable terminal, a PMP, a notebook, and so forth.

[65] According to the present invention, the number of character input keys disposed on a touch screen used in a mobile device can be minimized, and Korean characters can be composed by a minimum touch action, thereby simplifying a Korean character input action and thus reducing the time required for inputting Korean characters and effectively using a limited touch screen region.

[66] While the present invention has been shown and described with reference to exemplary embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the

spirit and scope of the invention as defined by the appended claims. However, such changes should be regarded as falling within the technical scope of the present invention. Accordingly, the true technical scope of the present invention should be defined by the appended claims.

Claims

[Claim 1] A Korean character input apparatus for composing and completing a Korean character according to a user touch input with respect to consonant and vowel input keys, the Korean character input apparatus comprising:
an input window comprising a consonant input key, a " ㅣ " vowel input key provided to the right of the consonant input key, and a "ㅡ" vowel input key provided under the consonant input key;
a character combining means by which when one of the " ㅣ " vowel input key and the "ㅡ" vowel input key of the input window is touch-selected, a consonant corresponding to the consonant input key provided to the left of the " ㅣ " vowel input key or provided above the "ㅡ" vowel input key is automatically selected as an initial consonant and thus is combined with a vowel corresponding to the touch-input vowel input key;
an output window for displaying the composed Korean character; and
a controller for controlling a touch input on the input window and an output of the composed Korean character on the output window.

[Claim 2] The Korean character input apparatus of claim 1, wherein when another consonant input key is touched and selected after the vowel input key is input, the character combining means combines a consonant corresponding to the touch-selected consonant input key with the composed Korean character as a final consonant of the Korean character.

[Claim 3] The Korean character input apparatus of claim 1, wherein a plurality of consonant input keys are provided, each of which comprises corresponding " ㅣ " vowel input key and "ㅡ" vowel input key.

[Claim 4] The Korean character input apparatus of claim 3, wherein a plurality of " ㅣ " vowel input keys and "ㅡ" vowel input keys are connected with each other to form a grid structure.

[Claim 5] The Korean character input apparatus of claim 1, wherein a vowel type of the vowel corresponding to the touch-input vowel input key is determined by a dragging gesture continuing from the vowel input key.

[Claim 6] The Korean character input apparatus of claim 1, wherein a vowel type of the vowel corresponding to the touch-input vowel input key is determined according to a region where a user's touch of the vowel input key is stopped.

[Claim 7] The Korean character input apparatus of claim 5, wherein the vowel

corresponding to the touch-input vowel input key is determined as an input vowel if there is no dragging gesture made from the touch of the vowel input key, and if there is a dragging gesture from the touch of the vowel input key, the input vowel is determined according to a combination of the corresponding vowel and a dragging pattern.

[Claim 8] The Korean character input apparatus of claim 7, wherein if a dragging gesture made from the touch of the vowel input key extends to another vowel input key, the input vowel is determined according to a combination of the corresponding vowel, a dragging pattern, and a vowel corresponding to the another vowel input key.

[Claim 9] The Korean character input apparatus of claim 5, wherein if a dragging gesture made form the vowel input key is recognized as a single-touch dragging gesture, it is recognized as a pure-vowel input, and if the dragging gesture is recognized as multi-touch dragging gesture, it is recognized as a compound-vowel input, thus composing the Korean character.

[Claim 10] The Korean character input apparatus of claim 9, wherein when a dragging direction is determined by the single-touch dragging gesture from the vowel input key, the dragging gesture is recognized as an input of a pure vowel "ㅏ", "ㅓ", "ㅗ", or "ㅜ", and when the dragging direction is determined by the multi-touch dragging gesture, the dragging gesture is recognized as an input of a compound vowel "ㅑ", "ㅕ", "ㅛ", or "ㅠ", thus composing the Korean character.

[Claim 11] A touch-screen based electronic device comprising the Korean character input apparatus according to any one of claims 1 through 10.

[Claim 12] A Korean character input method based on combinations of consonants and vowels, the Korean character input method comprising:

by touch-selecting one of a "ㅣ" vowel input key provided to the right of a consonant input key and a "ㅡ" vowel input key provided under the consonant input key, automatically selecting a consonant corresponding to the consonant input key as an initial consonant of a Korean syllable; and

determining an input vowel according to a dragging gesture continuing from the touch-selected vowel input key.

[Claim 13] The Korean character input method of claim 12, further conprises:

if another consonant input key is touch-selected after a step of determining the input vowel, recognizing a consonant corresponding to the touch-selected consonant input key as a final consonant and

combining the consonant with a combination of the automatically selected consonant and the determined input vowel.

[Claim 14] The Korean character input method of claim 12, wherein a plurality of consonant input keys are provided, each of which comprises a " ㅣ " vowel input key provided to the right of the consonant input key and a "ㅡ" vowel input key provided under the consonant input key.

[Claim 15] The Korean character input method of claim 12, wherein a plurality of " ㅣ " vowel input keys and "ㅡ" vowel input keys are connected with each other to form a grid structure.

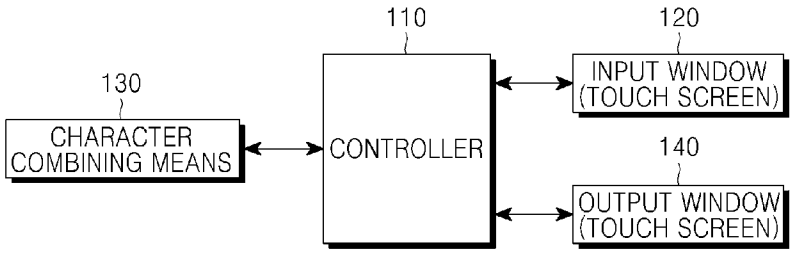
[Claim 16] The Korean character input method of claim 12, wherein the vowel corresponding to the touch-input vowel input key is determined as an input vowel if there is no dragging gesture made from the touch of the vowel input key, and if there is a dragging gesture from the touch of the vowel input key, the input vowel is determined according to a combination of the corresponding vowel and a dragging pattern.

[Claim 17] The Korean character input method of claim 12, wherein if a dragging gesture made from the touch of the vowel input key extends to another vowel input key, the input vowel is determined according to a combination of the corresponding vowel, a dragging pattern, and a vowel corresponding to the another vowel input key.

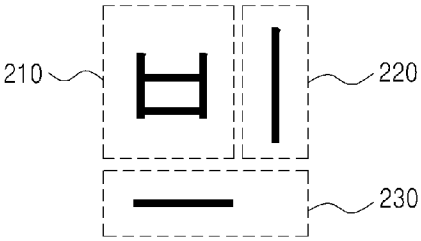
[Claim 18] The Korean character input method of claim 12, wherein if a dragging gesture made form the vowel input key is recognized as a single-touch dragging gesture, it is recognized as a pure-vowel input, and if the dragging gesture is recognized as multi-touch dragging gesture, it is recognized as a compound-vowel input, thus composing the Korean character.

[Claim 19] The Korean character input method of claim 12, wherein when a dragging direction is determined by the single-touch dragging gesture from the vowel input key, the dragging gesture is recognized as an input of a pure vowel " ㅏ ", " ㅓ ", "ㅗ", or "ㅜ", and when the dragging direction is determined by the multi-touch dragging gesture, the dragging gesture is recognized as an input of a compound vowel " ㅑ ", " ㅕ ", "ㅛ", or "ㅠ", thus composing the Korean character.

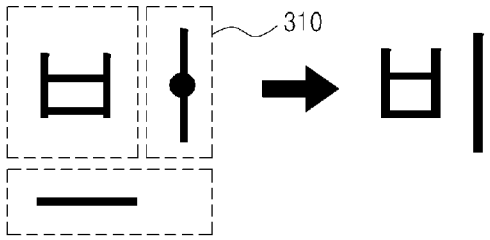
[Fig. 1]



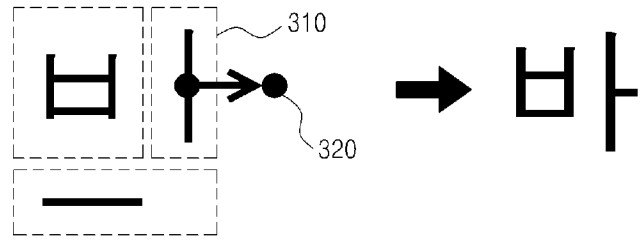
[Fig. 2]



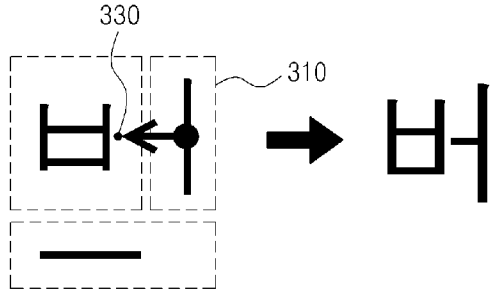
[Fig. 3a]



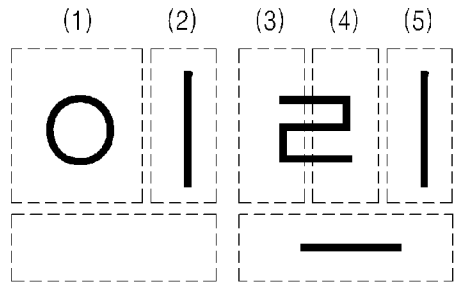
[Fig. 3b]



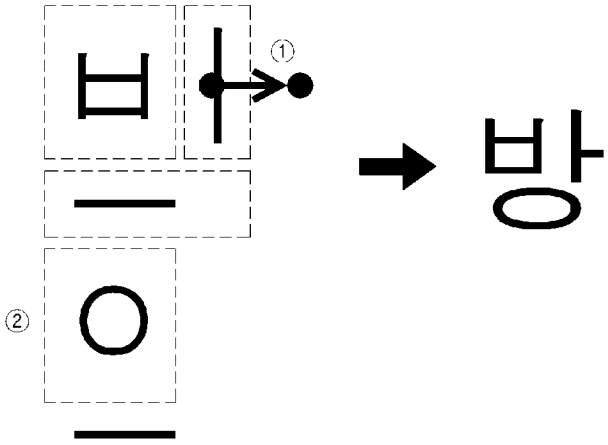
[Fig. 3c]



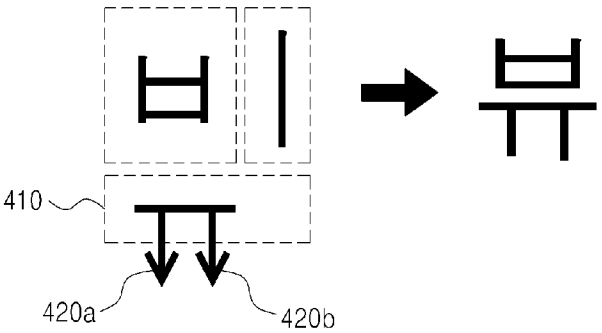
[Fig. 3d]



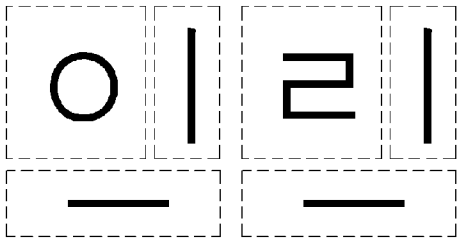
[Fig. 3e]



[Fig. 4]



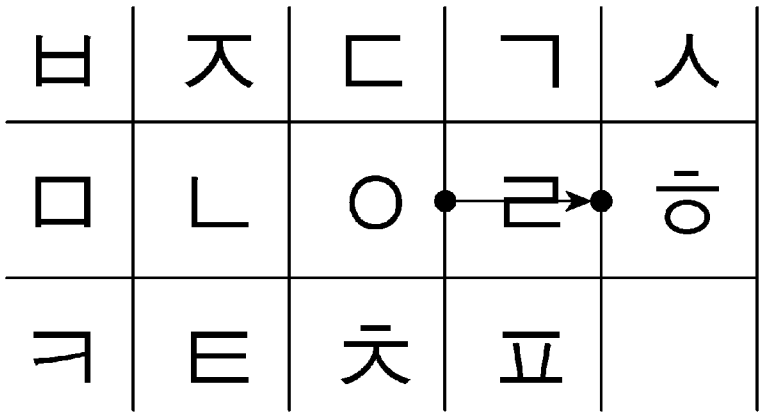
[Fig. 5a]



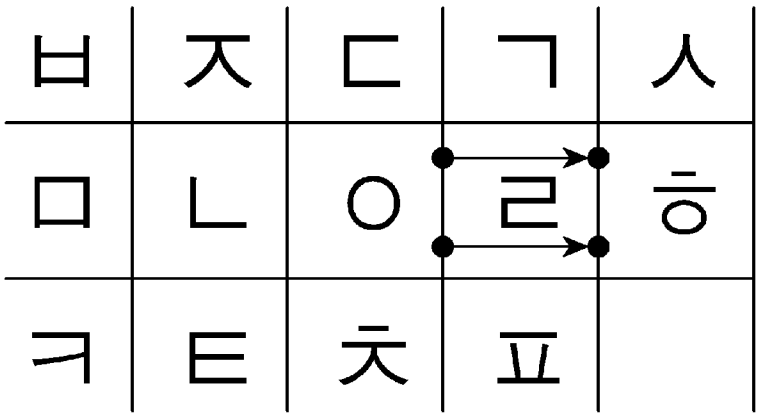
[Fig. 5b]

ㅂ	ㅈ	ㄷ	ㄱ	ㅅ
ㅁ	ㄴ	ㅇ	ㄹ	ㅎ
ㅋ	ㅌ	ㅊ	ㅍ	

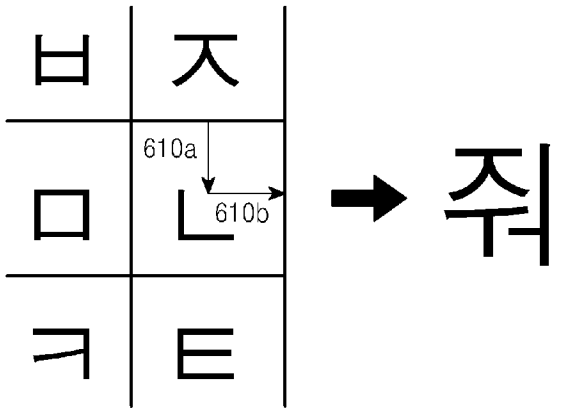
[Fig. 5c]



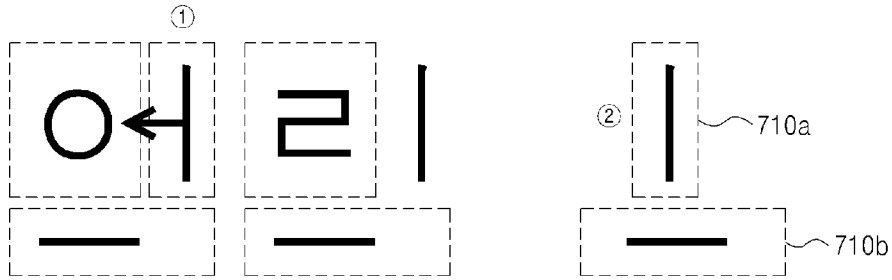
[Fig. 5d]



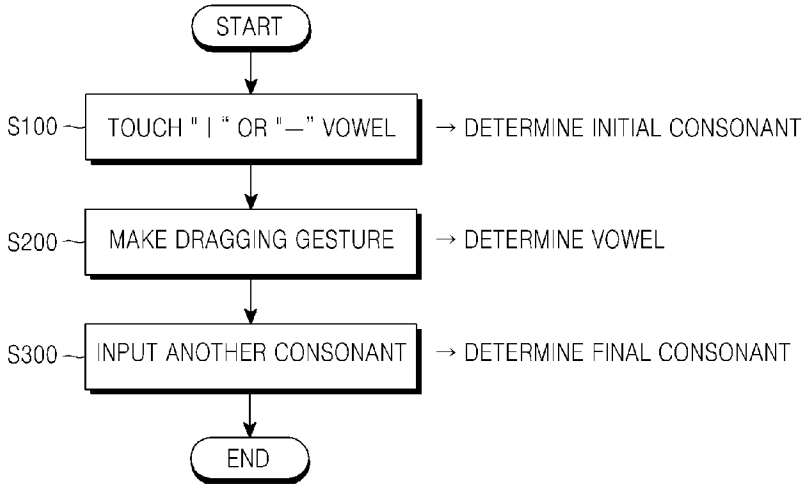
[Fig. 6]



[Fig. 7]



[Fig. 8]


START
S100
TOUCH " | " OR "—" VOWEL
→ DETERMINE INITIAL CONSONANT
S200
MAKE DRAGGING GESTURE
→ DETERMINE VOWEL
S300
INPUT ANOTHER CONSONANT
→ DETERMINE FINAL CONSONANT
END

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2010/008846

A. CLASSIFICATION OF SUBJECT MATTER

G06F 3/023(2006.01)i, G06F 3/048(2006.01)i, G06F 3/041(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06F 3/023; G06F 3/02; H04M 1/23; G06F 15/02; H04B 1/40; G06F 3/041

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: hangul, consonant, vowel, touch, combine

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 10-2008-0071523 A (SAMSUNG ELECTRONICS CO., LTD.) 04 August 2008 See the abstract, Figs.3-4, 7-8 and paragraphs [0029]-[0050],[0071]-[0087].	1-19
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A	KR 10-2004-0016365 A (KANG, HOON KEE et al.) See the abstract, Figs.3-6 and pages 5-8.	1-19

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 AUGUST 2011 (29.08.2011)	**30 AUGUST 2011 (30.08.2011)**

Name and mailing address of the ISA/KR

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Facsimile No. 82-42-472-7140

Authorized officer

LEE, Jung Ho

Telephone No. 82-42-481-5704

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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