

Specification

Thai input method and the keypad

FIELD OF THE INVENTION

The present invention is related to a Thai input method and a keypad, in particular to a Thai input method and a keypad for an electronic device such as computer and mobile phone.

BACKGROUND OF THE INVENTION

Thai is a sort of spelling language, which consists of 44 consonants (two letters are abolished, which still exist in letter list), 32 vowels and 5 tone marks (no mark for the first tone mark). Those vowels are written leading or following, above or below the consonants. Those tone marks are written above consonants. Thai character generally is written from left to right, without punctuation.

With the technique of communication development, more and more people choose sending SMS with mobile. Basically, there are 42 consonants and 22 vowels, 4 tone marks in Thai characters when you input SMS using mobile keypad. Typically, The Thai consonants are classified into 9 groups according to the traditional Thai input method, mapped to figure key 1-9 in a keyboard. All the other vowels and tone marks are shown by switching the feature of input for user to select. This sort of input method takes long time to search every individual character. Therefore Thai prefer to choose English

input method for saving time. The following are regular relationship between figure key and Thai consonant:

Figure	Thai Consonant
1	ก ข ฃ ค ฅ
2	ฆ ง จ จ
3	ช ฌ ฎ ญ
4	ฎ ฏ ฐ ฑ ฒ ณ
5	ด ต ถ ท ธ
6	น บ ป ผ ฝ
7	พ ฟ ภ ม ย
8	ร ล ว ศ ษ
9	ส ห พื อ ฮ

All above consonants are grouped by figure sequence; it's hard to be combined with keypad.

DETAILED DESCRIPTION OF THE INVENTION

In order to solve the above problems, the present invention provides an input method which display with input-sequence and character figure, for the convenience of inputting rapidly and remember.

In addition, the purpose of the present invention is to mapping Thai character and keypad configuration, so that visualize vowel and tone mark.

To achieve all above purpose, the present invention discloses a method of Thai input for inputting Thai on a computer or a mobile phone keypad, including the steps of:

classifying the Thai 44 consonants into 10 groups by strokes sequence: the 5 primary groups are mapped to "ก" "ข" "ค" "ด" "ต" and the 5 composite groups mapped to "ก+ก" "ก+ข" "ข+ข" "ค+ก" "ด+ข", wherein the first primary group maps to "ก" and comprises of "ก ฏ ฎ ถ ฑ"; the second primary group maps to "ข" and comprises of "ข ฎ ฎ ษ" ; the third primary group maps to "ค" and comprises of "ค ฌ ฌ ฌ" ; the fourth primary group maps to "ด" and comprises of "ด ฒ ฒ ฒ" ; the fifth primary group maps to "ต" and comprises of "ต จ ฎ ฎ ฎ" ; the sixth composite group maps to "ก+ก" and comprises of "ก ฑ ฌ ฌ" ; the seventh composite group maps to "ก+ข" and comprises of "ก ฌ ฌ ฌ ฌ" ; the eighth composite group maps to "ข+ข" and comprises of "ข ฌ ฌ ฌ ฌ" ; the ninth composite group maps to "ค+ก" and comprises of "ค ฌ ฌ ฌ ฌ" ; the tenth composite group maps to "ด+ข" and comprises of "ด ฌ ฌ ฌ ฌ" ;

mapping keys 1-5 to the first to fifth primary groups;

displaying corresponding consonants in 1-5 primary groups on the screen when the keys 1-5 are pressed respectively, and inputting a selected consonant when a mapped key is pressed;

displaying corresponding consonants in the sixth composite group on the screen when the key 1 is pressed twice, and inputting a selected consonant when a mapped key is pressed;

displaying corresponding consonants in the seventh composite group on the screen when the key 1 and 2 is pressed in series, and inputting a selected consonant when a mapped key is pressed;

displaying corresponding consonants in the eighth composite group on the screen when the key 2 is pressed twice, and inputting a selected consonant when a mapped key is pressed;

displaying corresponding consonants in the ninth composite group on the screen when the key 1 and 3 is pressed in series, and inputting a selected consonant when a mapped key is pressed;

displaying corresponding consonants in the tenth composite group on the screen when the key 2 and 5 is pressed in series, and inputting a selected consonant when a mapped key is pressed.

Setting four tone marks “^{ˊ ˊ ˊ ˊ}” as a tone mark group, and classifying

vowels into 5 groups: the first vowel group including “^{ˊ ˊ ˊ ˊ}”; the

second vowel group including “^{ˊ ˊ ˊ ˊ}”; the third vowel

group including “^{ˊ ˊ ˊ ˊ}”; the fourth vowel group including “^{ˊ ˊ ˊ ˊ}”

ˊ ˊ

”; and the fifth vowel group including “^{ˊ ˊ ˊ ˊ}”;

mapping key 6 to the tone mark group, and mapping keys 7-11 to the first to fifth vowel group singly;

displaying corresponding tone marks or vowels on the screen when the keys 6-11 are pressed singly, and inputting a selected character when a mapped key is pressed; wherein if the selected character is a member of the first, third or fifth vowel group, input the selected character behind the consonants

according to the strokes sequence correspondingly; if the selected character is a member of the second vowel group or the " ะ " or " ึ " of the fourth vowel group, the selected vowel is inputted on the top of the previous consonant character; if the selected character is the " ุ " or " อ " of the fourth vowel group, the vowel selected is inputted on the bottom of the previous consonant character; if the selected character is a tone marks of the tone marks group, the tone marks is inputted on the top of the previous consonant while there are vowels on the top of said previous consonant, and the selected tone marks is inputted on the top of the vowel, while there is no vowel on the top of said previous consonant, the assigned tone marks should be inputted on the top of its next consonant.

The present invention also provides a mobile phone keypad implementing above method.

In another embodiment of the present invention, the touch screen input substitutes the keypad input.

The present invention setups keypad by make use of relation of character according to the font of Thai consonant character and the orders of strokes. Thus, the present invention raises the input speed extraordinary, and provides a beneficial tool which is concerned with SMS communication for Thai.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing aspects and other features of the present invention are explained in the following description, taken in connection with the accompanying drawings, in which:

FIG.1 illustrates a typical mobile telephone keypad;

FIG.2 illustrates an example of a mobile telephone keypad adapted for use with this invention;

FIG.3-14 illustrate examples of input sequences according to rules in FIG.2;

FIG.15 illustrates another example of a keypad adapted for use with this invention;

FIG.16-27 illustrate examples of input sequences according to rules in FIG.15;

FIG.28 illustrates an example of the consonant input feature of touch screen;

FIG.29 illustrates an example of the vowel input feature of touch screen;

FIG.30-41 illustrate examples of input sequences according to rules in FIG.28 and FIG.29

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

The inventor of the present application researches the font of Thai consonant character and the orders of strokes in detail, and classifies the Thai 44 consonants into 10 groups by the orders of strokes as follows, wherein the arrows present the strokes direction:

សាលាស្រី

7

groups are the sixth to tenth composite groups, the orders of strokes of which correspond to "ㄋ+ㄋ""ㄋ+ㄣ""ㄣ+ㄣ""ㄣ+ㄣ""ㄣ+ㄣ".

Keys 1-5 of a mobile phone keypad correspond to the first to fifth primary groups. The corresponding consonants will display on the screen when one of keys 1-5 is pressed, and a selected consonant is inputted when a mapping figure key is pressed.

The corresponding consonants in the composite groups will display on the screen when two of keys 1-5 is pressed in series, and a selected consonant is inputted when a mapping figure key is pressed.

Thus, all consonants can be inputted by using five keys in the mobile phone keypad.

If there are vowels and tone marks to be inputted, various traditional input methods can be used, for example the method of converting interface. And in the present invention, the inventor maps 6th to the 11th keys to 4 tone marks with 21 vowels for making the best of mobile keypad, since 5 keys being used to input consonants.

Vowels are classified into 5 groups: the first vowel group includes "ㄚ ㅏ ㅓ ㅗ ㅛ ㅜ ㅠ"; the second vowel group contains "ㅓ ㅕ ㅖ ㅗ ㅛ ㅜ ㅠ"; the third vowel group includes "ㅗ ㅛ ㅜ ㅠ"; the fourth vowel group contains "ㅓ ㅕ ㅖ ㅗ ㅛ ㅜ ㅠ"; and the fifth vowel group includes "ㅗ ㅛ ㅜ ㅠ ㅓ ㅕ ㅖ ㅗ ㅛ ㅜ ㅠ". The sixth key corresponds to tone mark group, and seventh to eleventh keys correspond to the first to fifth vowel group respectively.

If a vowel or a tone mark is to be inputted, press one of the keys 6-11 singly to display the corresponding vowels or tone marks, and inputting a selected character when a mapped key is pressed. If the selected character is a member of the first, third or fifth vowel group, input the selected character behind the consonants according to the strokes sequence correspondingly; if the selected character is a member of the second vowel group or the " ⁶ " or " ⁸ " of the fourth vowel group, the selected vowel is inputted on the top of the previous consonant character; if the selected character is the " ⁹ " or " ⁷ " of the fourth vowel group, the vowel selected is inputted on the bottom of the previous consonant character; if the selected character is a tone marks of the tone marks group, the tone marks is inputted on the top of the previous consonant while there are vowels on the top of said previous consonant, and the selected tone marks is inputted on the top of the vowel, while there is no vowel on the top of said previous consonant, the assigned tone marks should be inputted on the top of its next consonant.

The following sample will describe the interface of the present invention which is combined with the typical mobile keypad. As showing in figure 1, the typical mobile phone keypad includes 10 figure keys and 2 symbol keys "*" and "#".

As illustrating in figure 2, figure keys 1-5 are mapped to the first to fifth primary groups of consonants, key 6 are mapped to tone mark group, figure keys 7-9,0 and symbol key "#" are mapped respectively to the first to fifth vowel group in the mobile keypad .

For example, it includes the following steps to input a sentence
 จะไป พิ้งนี้ using the above keypad:

1. Pressing figure key 5 to access the fifth primary group, then pressing and holding key 2 to input “จ” , as shown in figure 3;
2. Pressing figure key 9 to access the third primary group, then pressing and holding figure key 1 to input “ง” , as shown in figure 4;
3. Pressing figure key 7 to access the first primary group, then pressing and holding figure key 4 to input “ป” , as shown in figure 5;
4. Pressing figure key 2 to access the second primary group, then pressing and holding figure key 2 to input “บ” , as show in figure 6;
5. Pressing figure key 2 twice to access the eighth composite group, then pressing and holding figure key 3 to input “พ” , as shown in figure 7;
6. Pressing figure key 4 to access the forth primary group, then pressing and holding figure key 3 to input “ผ” , as shown in figure 8;
7. Pressing figure key 0 to access the forth vowel group, then pressing and holding figure key 1 to input “ะ” , wherein vowel “ะ” being inputted to the bottom of consonant “ผ” , as shown in figure 9;

8. Pressing figure key 6 to access the tone mark group, then pressing and holding figure key 1 to input “ ’ ”, wherein tone mark “ ’ ” being inputted close to the top of consonant “ ฅ ”, as shown in figure 10;
9. Pressing figure key 5 to access the fifth primary group, then pressing and holding figure key 1 to input “ ฅ ”, as shown in figure 11;
10. Pressing figure key 3 to access the third primary group, then pressing and holding figure key 2 to input “ ฅ ”, as shown in figure 12.
11. Pressing figure key 8 to access the second vowel group, then pressing and holding figure key 4 to input “ ฅ ”, wherein vowel “ ฅ ” being inputted on the top of consonant “ ฅ ”, as shown in figure 13.
12. Pressing figure key 6 to access the tone mark group, then pressing and holding figure key 2 to input “ ฅ ”, wherein tone mark “ ฅ ” being inputted on the top of vowel “ ฅ ”, as shown in figure 14.

All the above steps implemented the alphabetic input for whole sentence “ จ ะ ไป พร ุ่ง นี้ ”.

Figure 15 shows another embodiment of mobile keypad according to the present invention. According to the rules of vowel and tone marks to consonant, for example, the figure key 5 is encircled with “4,2,6,8,0” which are mapped respectively to the first to fifth vowel group; the figure key “1,5,3,9,7” are mapped respectively to the first to fifth consonant group; the symbol key “#” are mapped to tone marks group.

For example, it includes the following steps to input the same sentence จะ ไป พรุ้งนี้ using the above keypad:

1. Pressing figure key 7 to access the fifth primary group, then pressing and holding figure key 2 to input “จ ” , as shown in figure 16;
2. Pressing figure key 6 to access the third vowel group , then pressing and holding figure key 1 to input “ะ ” , as shown in figure 17
3. Pressing figure key 4 to access the first vowel group, then inputting and holding figure key 4 to input “ไ ” , as shown in figure 18;
4. Pressing figure key 5 to access the second primary group, then pressing and holding figure key 2 to input “ป ” , as shown in figure 20;
5. Pressing figure key 5 twice to access the eighth composite group, then pressing and holding figure key 3 to input “พ ” , as shown in figure key 21;
6. Pressing figure key 9 to access the forth primary group , then pressing and holding figure key 3 to input “รุ ” , as shown in figure 21;
7. Pressing figure key 8 to access the forth vowel group, then pressing and holding figure key 1 to input “ , ” , wherein vowel “ , ” is inputted on the bottom of consonant “รุ ” , as shown in figure 22;
8. Pressing symbol key # to access the tone mark group , then pressing and holding figure key 1 to input “ ’ ” , wherein tone mark “ ’ ” is

inputted on the top of a room close to consonant “จ” , as shown in figure 23;

9. Pressing figure key 7 to access the fifth primary group , then pressing and holding figure 1 to input “จ” , as shown in figure 24;

10. Pressing figure key 3 to access the third primary group , then pressing and holding figure key 2 to input “น” , as shown in figure 25;

11. Pressing figure key 2 to access the second vowel group, then pressing and holding figure key 4 to input “”, wherein vowel “” is inputted on the top of consonant “น” , as shown in figure 26;

12. Pressing symbol key # to access the tone mark group , then pressing and holding figure key 2 to input “” on the top of vowel “”, as shown in figure 27;

All the above steps implemented the alphabetic input for whole sentence “จ ะ ไป พบ ร ั จั นั ”.

Consequently, the user can arrange automatically the Thai character on the keys of keypad according to the above grouping rules.

The following sample will describe the input layout of the present invention which is combined with the typical touch screen.

As shown in figure 28, the touch panel includes “”, 5 consonant keys which are mapped to the first to fifth consonant group, and 2 symbol shift keys “” and “”.

As shown in figure 29 showing, the touch panel includes 6 keys

“     ” which are mapped to the vowel and tone marks group, and 2 symbol shift keys “” and “”. Wherein “” is the symbol key which shift from consonant to vowel keys, “” is the symbol key which shift from punctuation to alphabet.

A sample sentence “จ ะ โ ป พ ร ง ี่ ”

1. Touching the key “” to access the fifth primary group , and then touch “จ ” to input “จ ”, as shown in figure 30;
2. Touching the key  to shift to vowel inputting, and then touching the key  to access the forth vowel group, and then touching “จ ” to input “จ ”, as shown in figure 31;
3. Touching the key  to access the third vowel group, then touching “โ ” to input “โ ”, as shown in figure 32;
4. Touching the key  to shift to consonant inputting, and then touching “ป ” to access the second primary group, and then touching “ป ” to input “ป ”, as shown in figure 33;
5. Touching the key “” twice to access the eighth composite group , then touching “” to input “”, as shown in figure 34;
6. Touching the key “” to access the fourth primary group , then touching

“” to input “”, as shown in figure 35;

7. Touching the key  to shift to vowel inputting, then touching the key

 to access the fifth vowel group , and then touching “ ” to input “

 ”, wherein the vowel “ ” is inputted on the bottom of the previous consonant character “”, as shown in figure 36;

8. Touching the key  to access the tone mark group, then touching “ ” to inputting “ ”. Since there is no vowel on the top of the previous consonant “”, the assigned tone mark should be inputted on the top of its next consonant. as shown in figure 37 ;

9. Touching the key  to shift to consonant inputting, then touching the key “” to access the fifth primary group, and then touching “ ” to input “”, as shown in figure 38 ;

10. Touching the key  to access the third primary group , then touching “” to input “”, as shown in figure 39;

11. Touching the key  to shift to vowel inputting, then touching the key  to access the second vowel group, and then touching “ ” to input “

๒ ”, wherein the assigned vowel “ ๒ ” is inputted on the top of consonant “ ๒ ”, as shown in figure 40 ;

12. Touching the key  to access the tone mark group, then touching “ ๒ ” to input “ ๒ ”, since the vowel “ ๒ ” existed, the tone mark “ ๒ ” should be inputted on the top of vowel “ ๒ ”, as shown in figure 41 ;

All the above steps implemented the alphabetic input for whole sentence “ จ ะ ไป พ ร ัง นี้ ”.

The above diagram describes the implement method for the present invention, however, the present invention is not only this, the engineer who work on this area can improve on with the condition of following the present invention’s spirit and range.

Claims

1. A method of Thai input for inputting Thai on a computer or a mobile phone keypad, including the steps of:

classifying the Thai 44 consonants into 10 groups by strokes sequence: the 5

primary groups are mapped to "ก" "ข" "ค" "จ" "ฉ" and the 5

composite groups mapped to "ก+ก" "ก+ข" "ข+ข" "ค+ก" "

"จ+ข", wherein the first primary group maps to "ก" and comprises of

"ก ฦ อ ฮ ศ ษ"; the second primary group maps to "ข" and

comprises of "ข ส ู ฺ ฻"; the third primary group maps to "ค" and

comprises of "ค ฼ ฾ ฿ ฽"; the fourth primary group maps to "จ" and

comprises of "จ ฿ ฽ ฾ ฿"; the fifth primary group maps to "ฉ" and

comprises of "ฉ ฿ ฽ ฾ ฿"; the sixth composite group maps

to "ก+ก" and comprises of "ก ฦ อ ฮ ศ ษ"; the seventh composite

group maps to "ก+ข" and comprises of "ก ฦ อ ฮ ศ ษ"; the

eighth composite group maps to "ข+ข" and comprises of "ข ส ู ฺ ฻

฼ ฾ ฿ ฽"; the ninth composite group maps to "ค+ก" and comprises of

"ค ฼ ฾ ฿ ฽"; the tenth composite group maps to "จ+ข" and

comprises of "จ ฿ ฽ ฾ ฿";

mapping keys 1-5 to the first to fifth primary groups;

displaying corresponding consonants in 1-5 primary groups on the screen when the keys 1-5 are pressed respectively, and inputting a selected consonant when a mapped key is pressed;

displaying corresponding consonants in the sixth composite group on the screen when the key 1 is pressed twice, and inputting a selected consonant when a mapped key is pressed;

displaying corresponding consonants in the seventh composite group on the screen when the key 1 and 2 is pressed in series, and inputting a selected consonant when a mapped key is pressed;

displaying corresponding consonants in the eighth composite group on the screen when the key 2 is pressed twice, and inputting a selected consonant when a mapped key is pressed;

displaying corresponding consonants in the ninth composite group on the screen when the key 1 and 3 is pressed in series, and inputting a selected consonant when a mapped key is pressed;

displaying corresponding consonants in the tenth composite group on the screen when the key 2 and 5 is pressed in series, and inputting a selected consonant when a mapped key is pressed.

2. The method of claim 1, further including:

setting four tone marks “^{ˊ ˊ ˊ ˊ}” as a tone mark group, and classifying

vowels into 5 groups: the first vowel group including “^{ˊ ˊ ˊ ˊ}”; the

second vowel group including “^{ˊ ˊ ˊ ˊ}”; the third

vowel group including “^{ˊ ˊ ˊ ˊ}”; the fourth vowel group including “

4. A mobile phone keypad implementing the method of claim 2, figure keys 1,5,3,9,7 being mapped to the first to fifth consonant group, symbol key “#” being mapped to the tone mark group, figure keys 4,2,6,8,0 being mapped to the first to fifth vowel group.

5. A Thai input method of claim 2, a touch screen substituting the keypad, wherein the first to fifth consonant groups are displayed on the screen, the corresponding consonants are displayed when touching the screen key or key combination, and a selected consonant is inputted when a mapped key is pressed,

a display panel on the touch screen also including a shift key which is concerned with consonant / vowel, user can shift the alphabetic input from an interface of consonant inputting to an interface of the first to fifth vowel group displaying, the vowel or tone marks being displayed on the screen when the user selects the mapping figure key.

6. The Thai input method of claim 5, wherein said touch screen display panel further including a shift key which is concerned with punctuation and English character.