

Some of my Research Works

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UTYCC, Myanmar
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Table of Content

- Whoami
- HCI/**User_Interface**
- NLP/**Machine_Translation**
- NLP/**ASR**
- NLP/**TTS**
- NLP/**Sign_Language_Processing**
- AI/**Robot_Language_Acquisition**
- Future_Work/**.dreams.txt**
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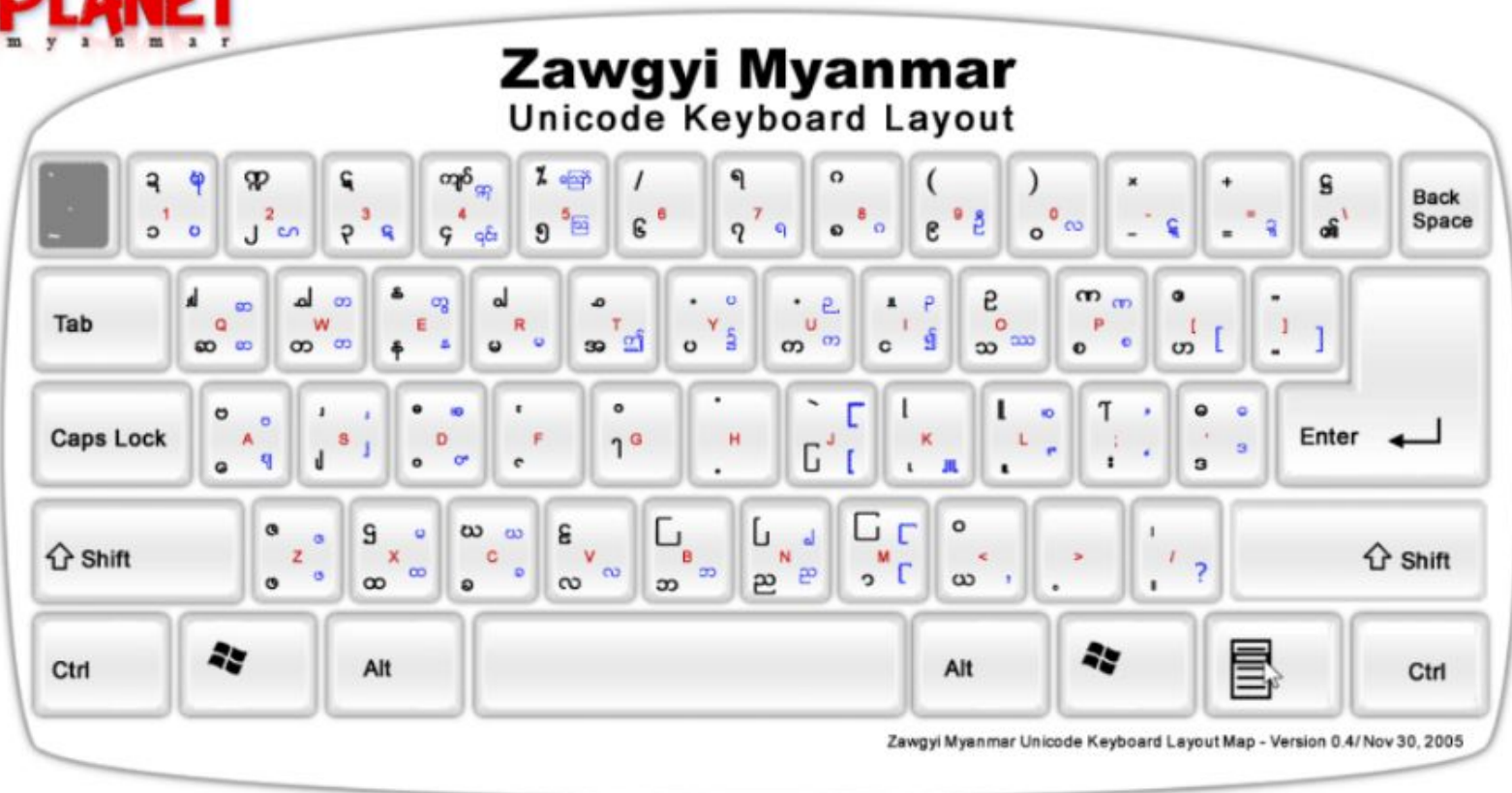
Whoami

- a Native of Myanmar
- Doctor's of Global Information and Telecommunication Studies from Waseda University, Japan
- Lecturer, Programmer/Project Supervisor (in Myanmar)
- Research Associate, Researcher
- HP:<https://sites.google.com/site/yekyawthunlp/>

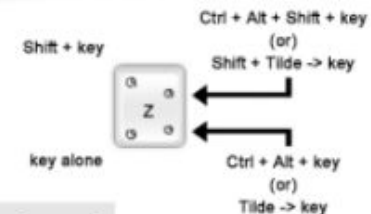
• HCI/User_Interface

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- The primary goal of this research is to develop user-friendly and common text input interfaces extendable for multiple Asian syllabic languages

• HCI/User_Interface



Dead-key အဖြစ်သုံးထားသော Tilde (သို့) Shift+Tilde key (နံပါတ် - ဝဲဘက်) ကိုရိုက်ရုံနှင့် မည်သည့် စာလုံးမျှပေါ်လာမည်မဟုတ်ပဲ အခြားကီးတစ်ခုဆက်ရိုက်မှသာ လက်ကွက်ပုံတွင် ပြထားသည့် အပြာရောင် စာလုံးများ ပေါ်မည်။ (Shift ကဲ့သို့ တွဲရိုက်ခြင်းမဟုတ်) ဥပမာ - Tilde ရိုက်ပြီး y ရိုက်လျှင် “၂” ပေါ်မည်။ Shift+Tilde ရိုက်ပြီး y ရိုက်လျှင် “၂” ပေါ်မည်။
www.zawgyi.net | www.alpha.com.mm | www.planet.com.mm တို့တွင် ဖိုင်များ ရယူနိုင်သည်။



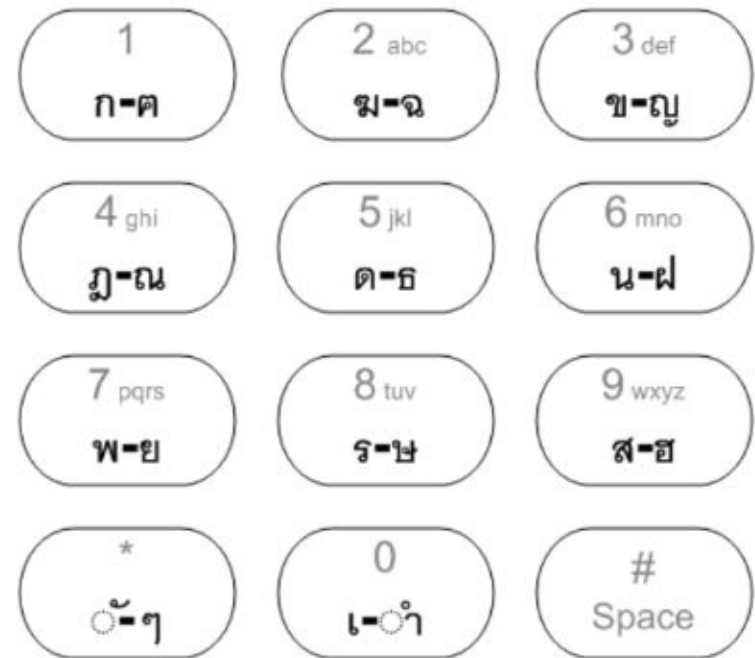
Zawgyi Myanmar Unicode System ကို Zawgyi.net နှင့် Alpha Info-Tech (Mandalay) တို့ပူးပေါင်းထုတ်ဝေသည်

.HCI/User_Interface

Example Mobile Keypad Layout for Thai language



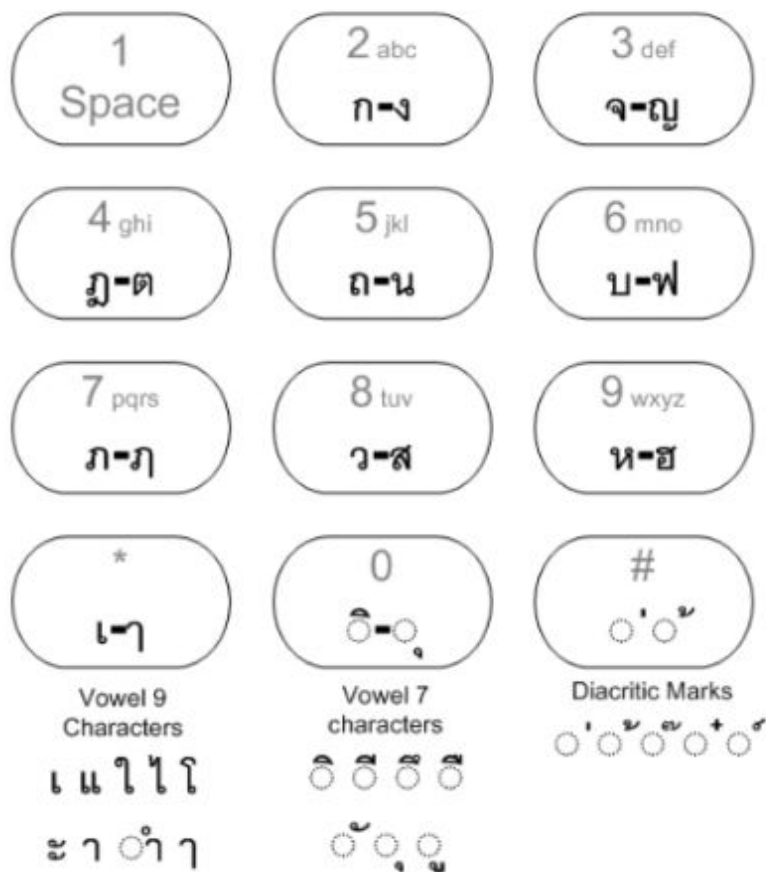
(a) Nokia



(b) Samsung

• HCI/User_Interface

Example Mobile Keypad Layout for Thai language



(c) Sony



(d) Motorola

• HCI/User_Interface



(a)



(b)

Example Mobile Keypad Layout for Myanmar

Here,

(a) for typing consonant

(b) for typing vowel

(c) for typing consonant with athat

(d) for typing independent vowel



(c)



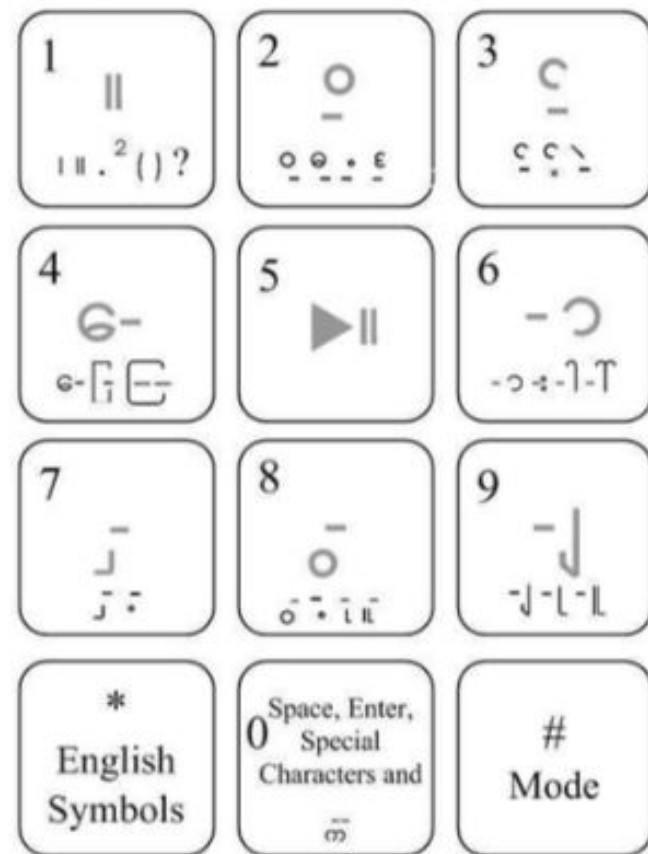
(d)

• HCI/User_Interface

Example Mobile Keypad Layout for Myanmar language (M9)



(c) Sony



(d) Motorola

. HCI/User_Interface

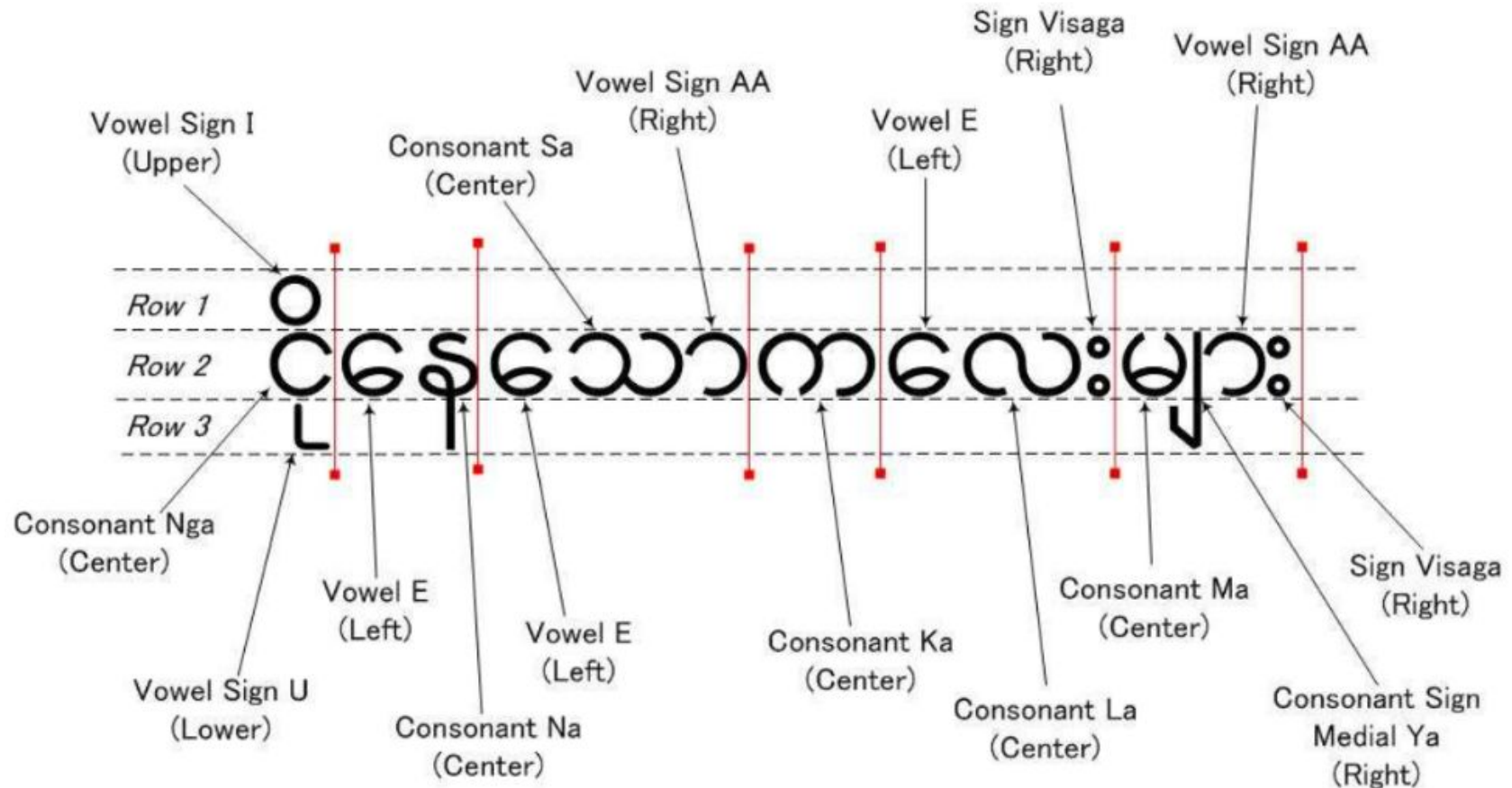


Fig. Myanmar Word "Crying Children"

. HCI/User_Interface

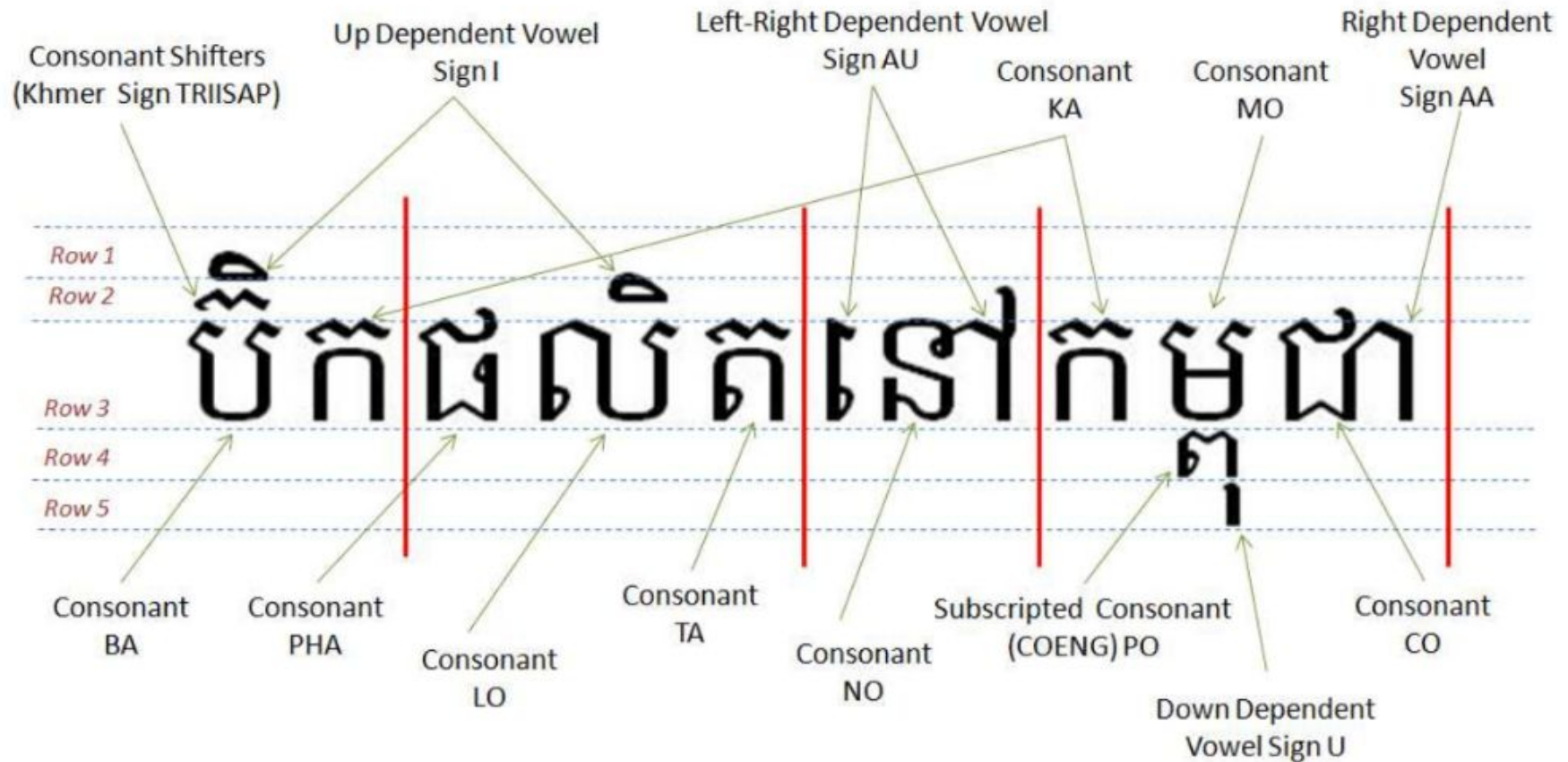


Fig. Khmer sentence "Bic Phalit Nau Campucha" (a pen made in Cambodia)

• HCI/User_Interface

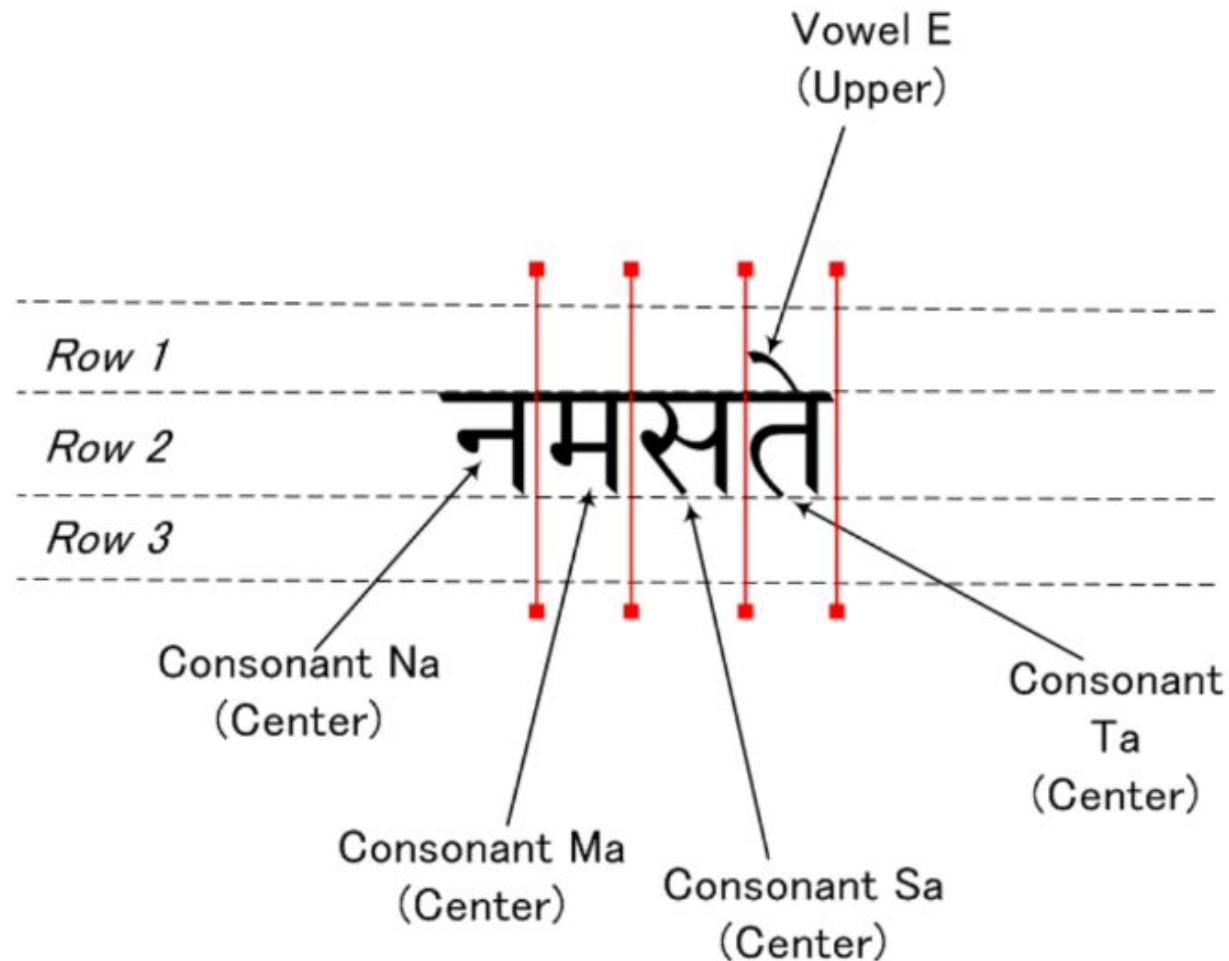


Fig. Nepali word "Namaste" (Hello!)

• HCI/User_Interface

क ख ग घ ङ

(ka) (kha) (ga) (gha) (ṅa)

च छ ज झ ञ

(ca) (cha) (ja) (jha) (ña)

ट ठ ड ढ ण

(ṭa) (ṭha) (ḍa) (ḍha) (ṇa)

त थ द ध न

(ta) (tha) (da) (dha) (na)

प फ ब भ म

(pa) (pha) (ba) (bha) (ma)

(a) Consonant

अ आ इ ई

(a) (ā) (i) (ī)

उ ऊ ऋ ॠ

(u) (ū) (ṛ) (ṝ)

लृ लृ ए ऐ

(l) (l̥) (e) (ai)

ओ औ

(o) (au)

(b) Vowel

. HCI/User_Interface

ក ខ គ ឃ ង

ច ដ ឆ ឈ ញ

ប ផ ព ភ ហ

ត ថ ទ ធ ទ

ប្ប ផ្គ ព្ព ភ្ន ម្ហ

យ្យ រ្រ ល្ល វ្វ ស្ប

ហ្ន ឡ អ្ន

Fig. Khmer consonant and subscript consonant

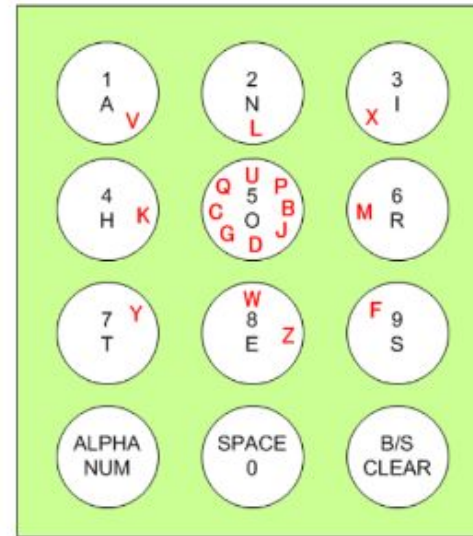
• HCI/User_Interface



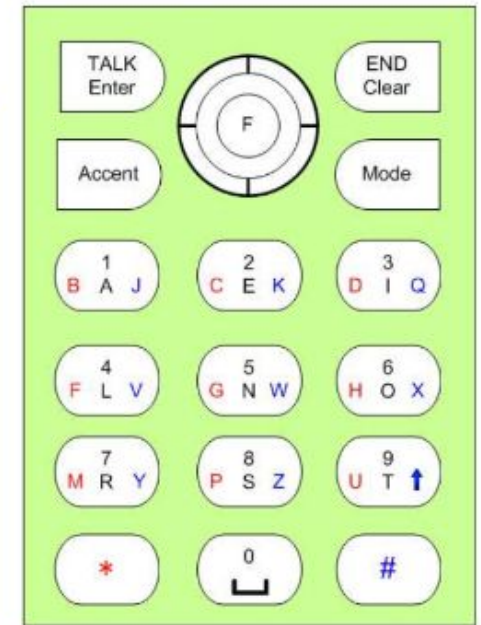
(a) Standard ISO



(b) LessTap



(b) MessageEase

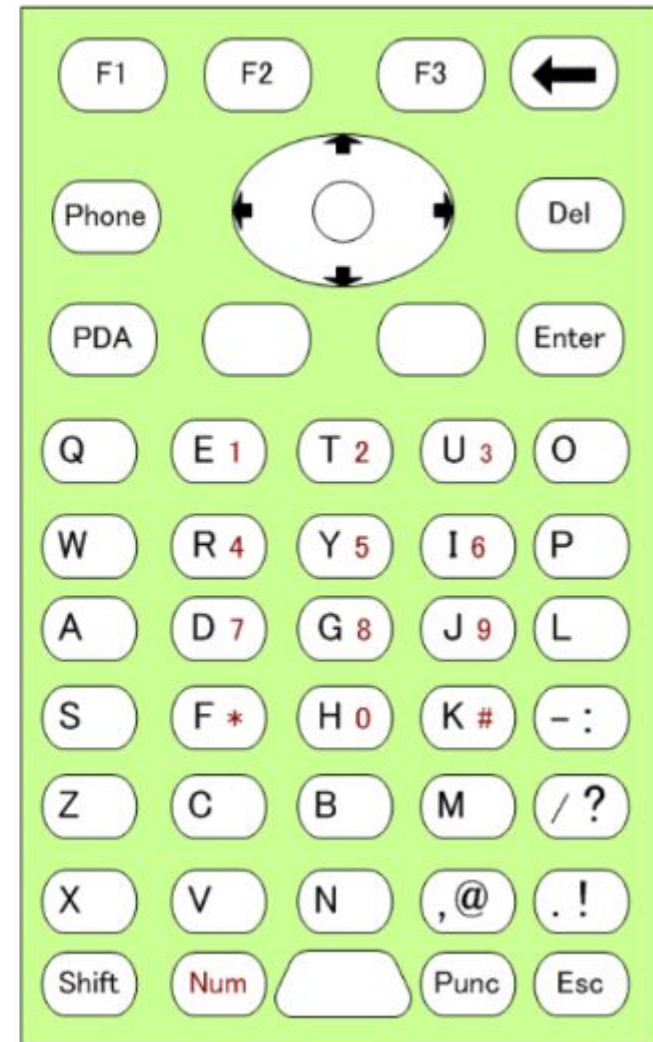


(b) SIMKEYS

. HCI/User_Interface



(a) FasTap



(b) Deata II

. HCI/User_Interface

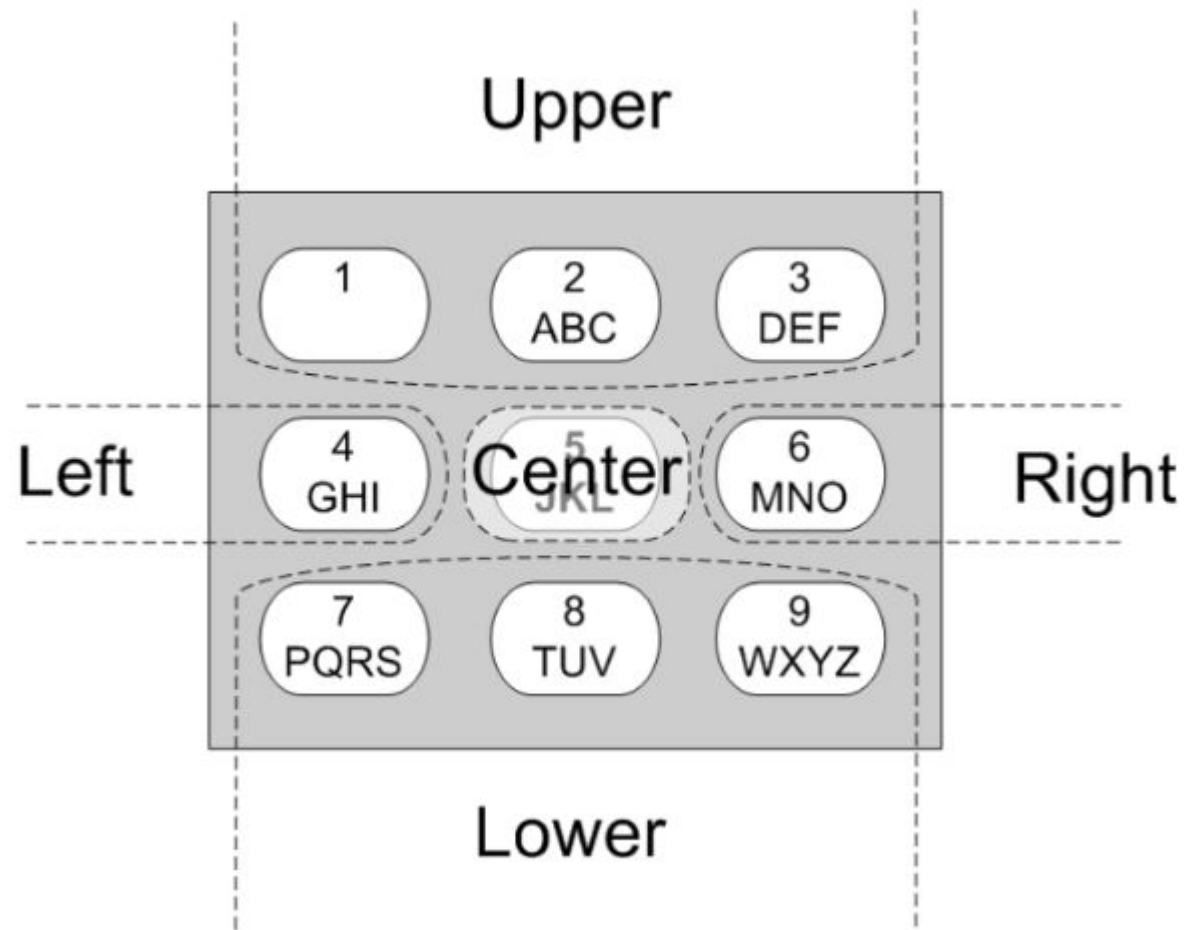
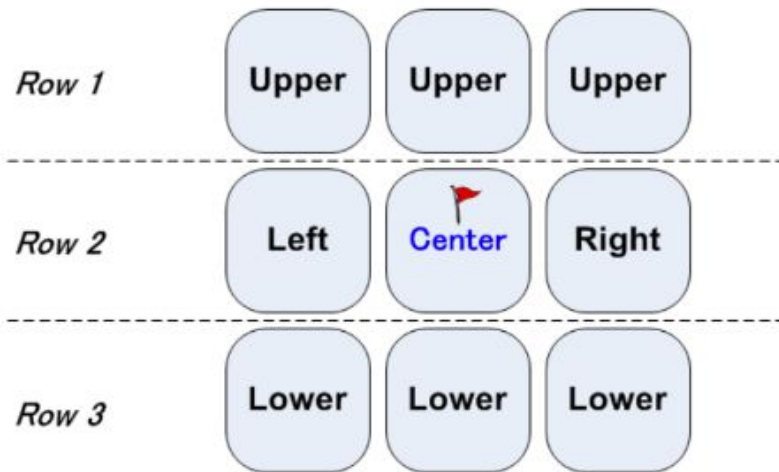


Fig. Concept of Positional Mapping

.HCI/User_Interface



၁ = ပါ,တယ်,လား,လဲ,သည်,၏,ထို,ဖြင့်,ဟို,ဒီ,အဲ,ငါ,
 နင်,သူ,မင်း,ညည်း,ရှင်,ရှင်,သင်,ကျုပ်,ကျွန်တော်,
 ကျွန်မ,ကျနော်,ကျမ,ကျွန်ုပ်,ကျုပ်,ပြား,ခွဲ,နာရီ,မိနစ်,
 ရာ,ထောင်,သောင်း,သိန်း,သန်း,ကုဋေ etc.

$$\begin{array}{r} 2 = \frac{\cdot}{C}, \frac{O}{E}, \frac{\ominus}{O^{\circ}}, \frac{\diagdown}{E^{\circ}} \\ 3 = \frac{\diagup}{EO}, \frac{\diagdown}{EO} \end{array}$$
$$4 = 6 - \boxed{-}$$

5 = က,ခ,ဂ,ဃ,င,စ,ဆ,ဇ,ဈ,ည to အ

$$6 = \neg, \downarrow, \neg\colon$$
$$7 = \overline{1}, \overline{2}, \overline{3}, \overline{4}$$
$$8 = \bar{0}, \bar{\omega}, \bar{\cdot}.$$

9 = space,!,''

$$0 = \frac{0}{0}, \frac{0}{0}, \frac{0}{0}, \frac{0}{0}, \frac{0}{0}, \frac{0}{0} \text{ etc.}$$

* = ဒွိ၊ ဘြဲ၊ ပု၊ ဇ၊ သြ၊ ပု၊ ရှိ၊ မှီ၊ ၎င်း၊ ဆော်၊ ဦး၊ ဌ၊ သ၊ ဉာ၊ စ etc.

= @,.,,,,;,:,-,\$,%,!,&,#,+,*=,/,(,),<, >,[,],{ etc.

Fig. Keypad layout based on Positional Mapping

. HCI/User_Interface

1 = অ|আ|ই|ঈ|উ|ঊ|
2 = ঋ|ঁ|
3 = ঞ|এ|ঐ|ও|ঔ|
4 = ি|ে|ৈ|
5 = ক|খ|গ|ঘ|ঙ|চ|ছ|জ|ঝ|ঞ| etc.
6 = া|ী|্য|ো|
7 = ো|ৌ|
8 = ু|ূ|
9 = ়|্র|্|
0 = space|enter|'|
* = ক|ক|ক|ক|ফ|ক|ক|ক|ক|ক| etc.
= |,|?|!|;|:

Fig. An example keypad layout for Bengali based on Positional Mapping

• HCI/User_Interface

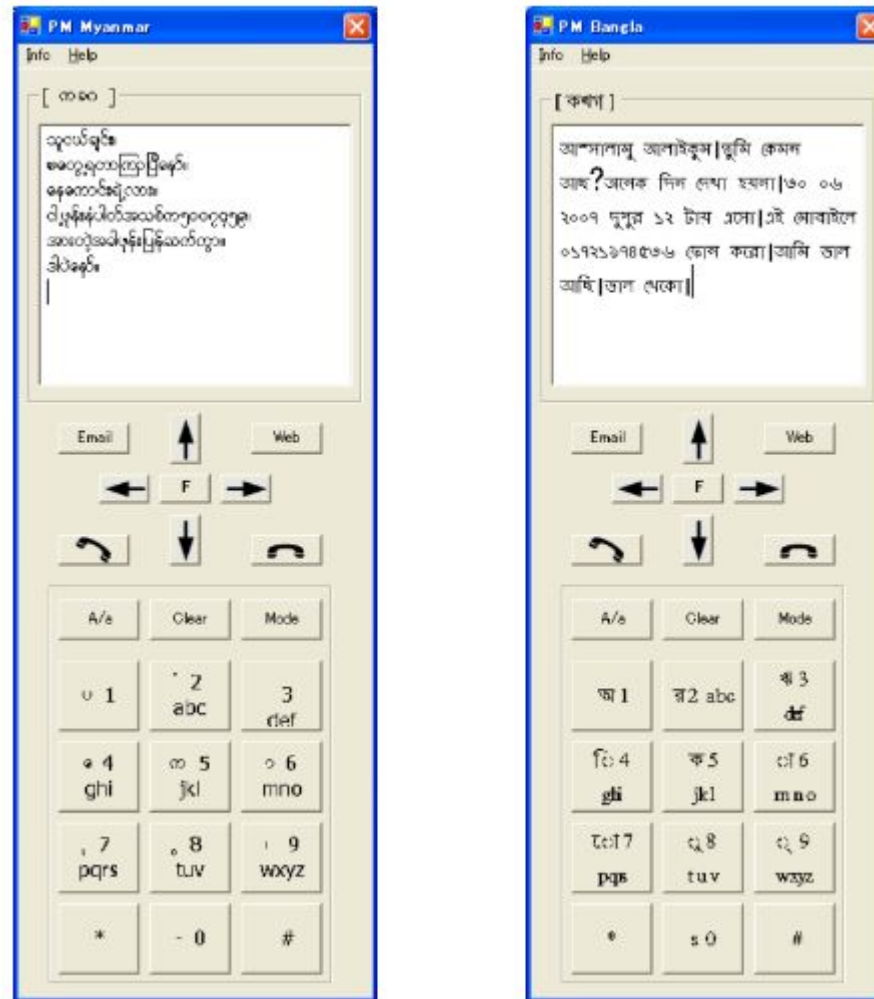


Fig. Prototype for user study (left) for Myanmar (right) for Bengali

. HCI/User_Interface



(a) Positional Mapping prototype for user study with PDA

. HCI/User_Interface

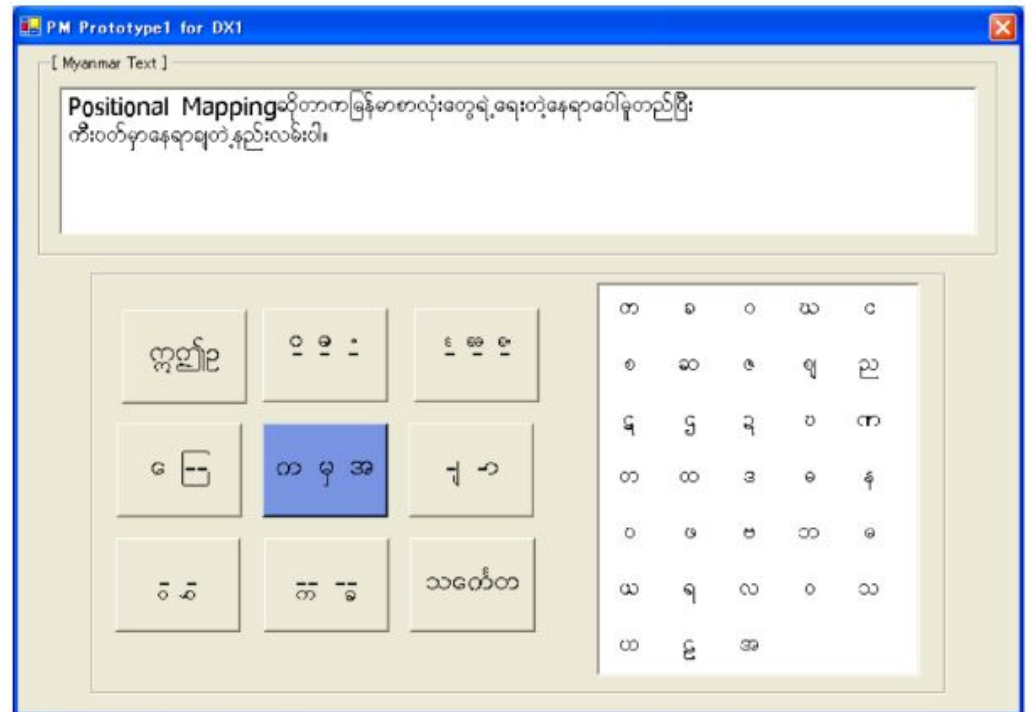
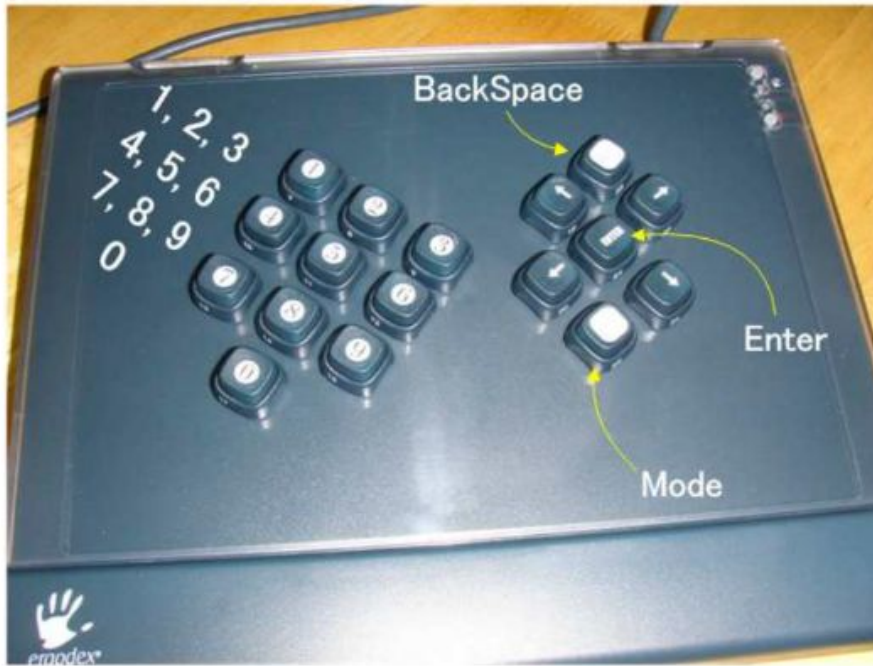


Fig. Positional Mapping prototype for Ergodex DX1

.HCI/User_Interface

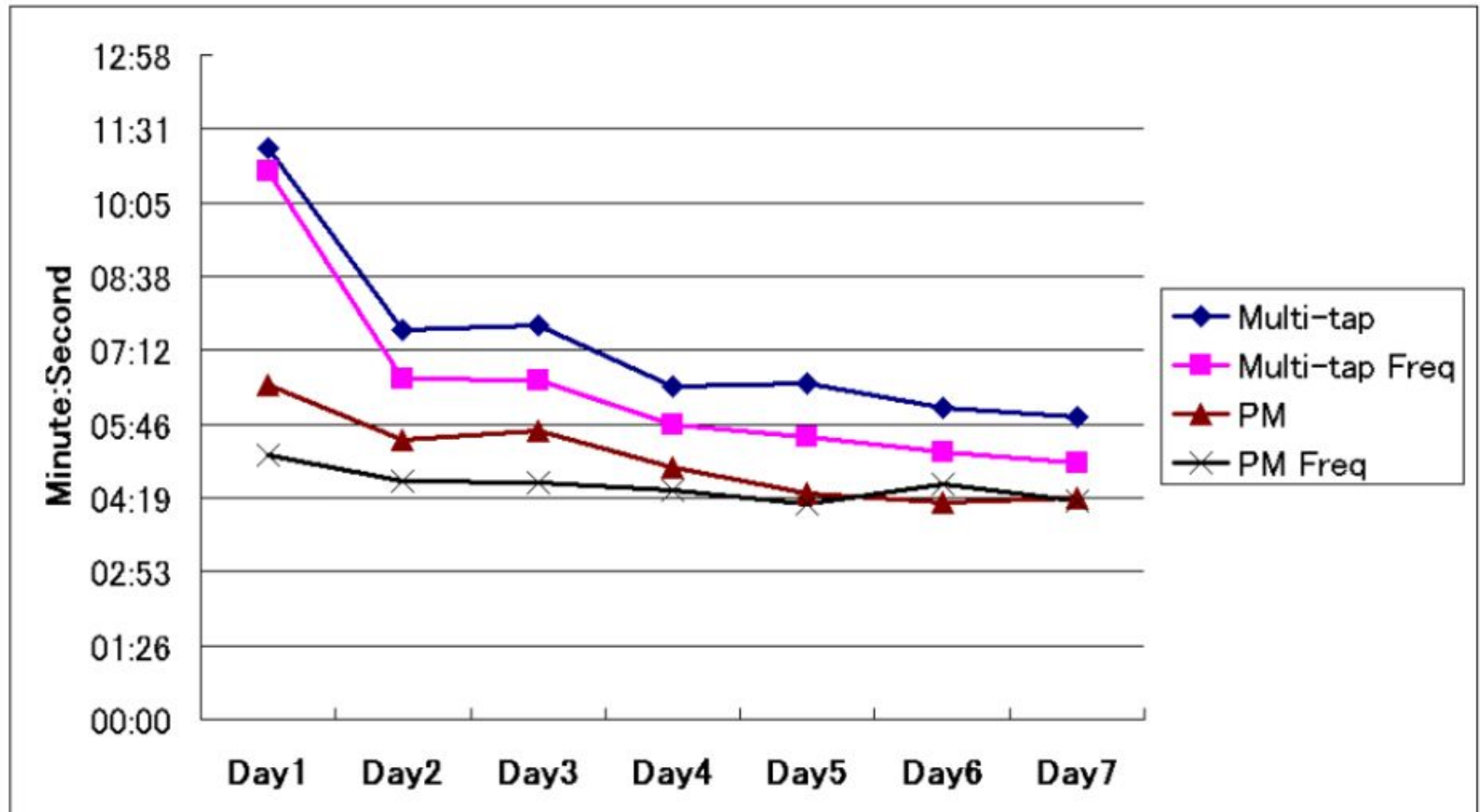


Fig. Typing speed improvement of slowest user for mobile phone prototype
With 4 different configuration files (experiment results for 7 days)

• HCI/User_Interface

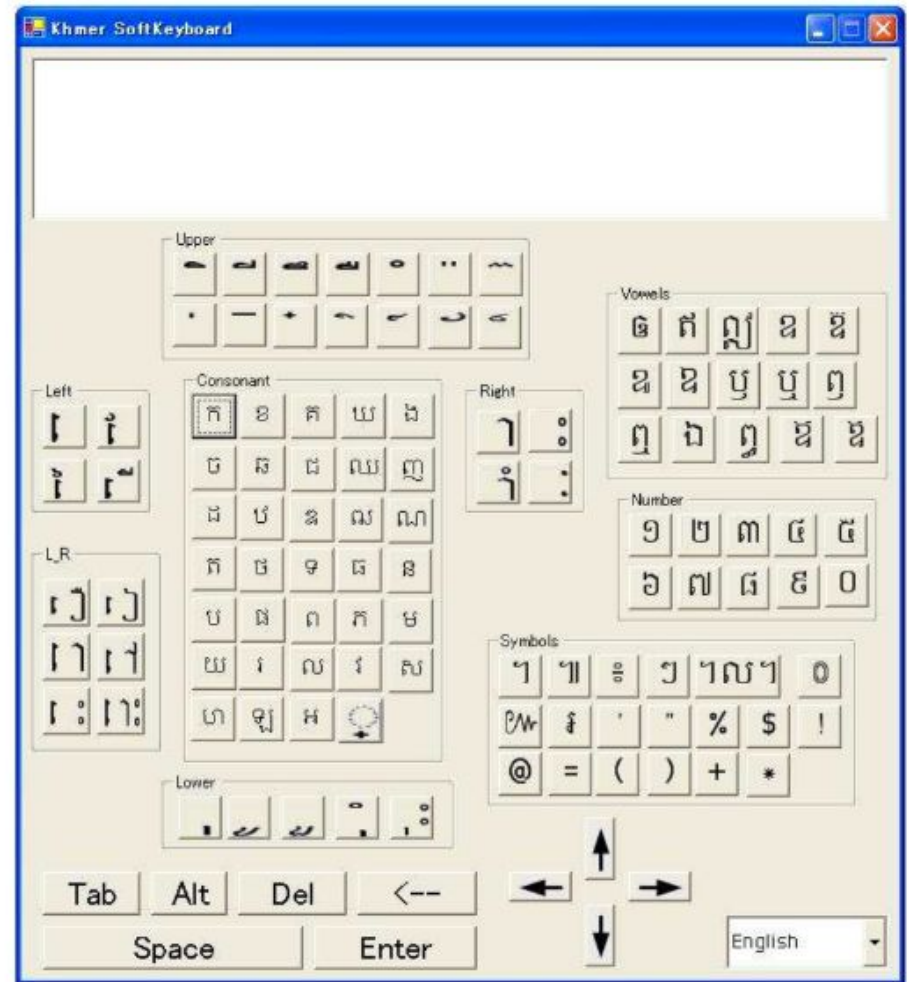
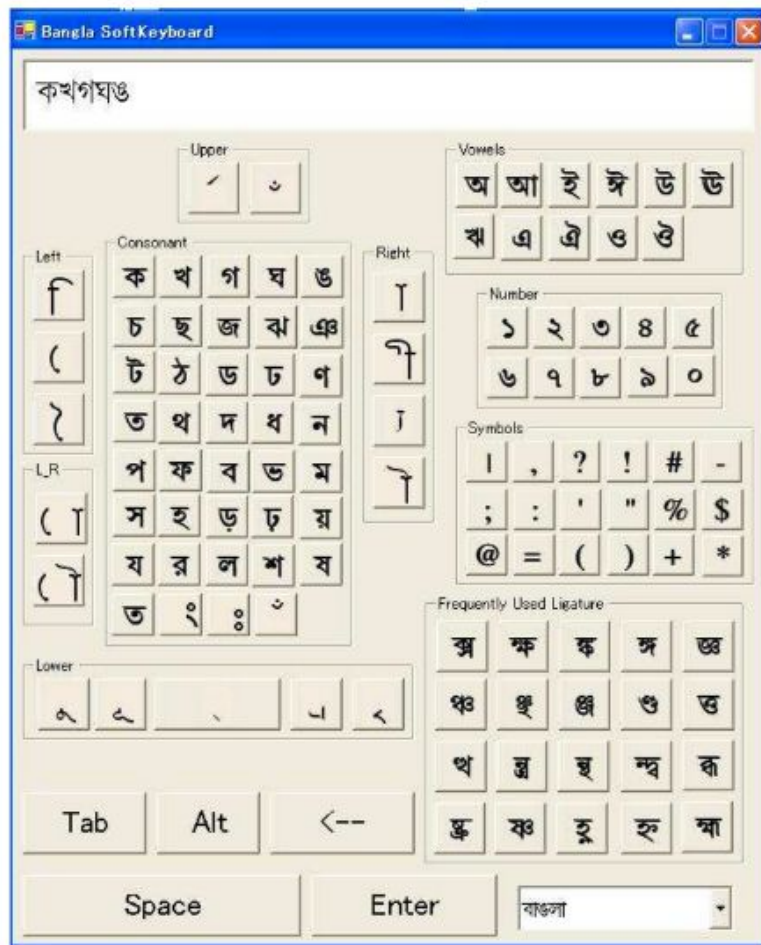


Fig. Positional Mapping prototype for whiteboard
(left) Bengali, (right) Khmer

. HCI/User_Interface



Fig. (left) User study with tablet PC, (right) User study with whiteboard

. HCI/User_Interface

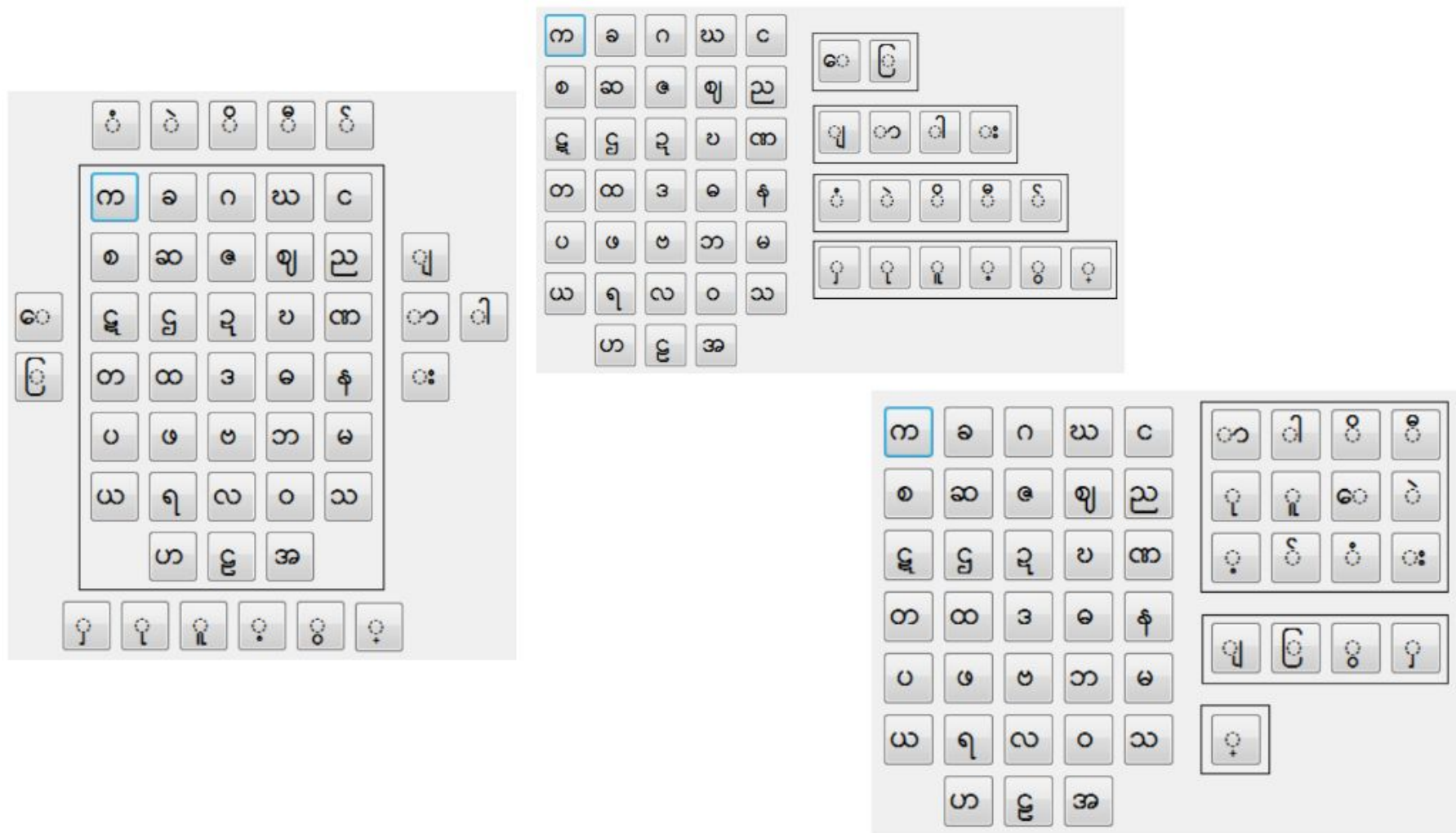


Fig. Which layout is better?

• HCI/User_Interface

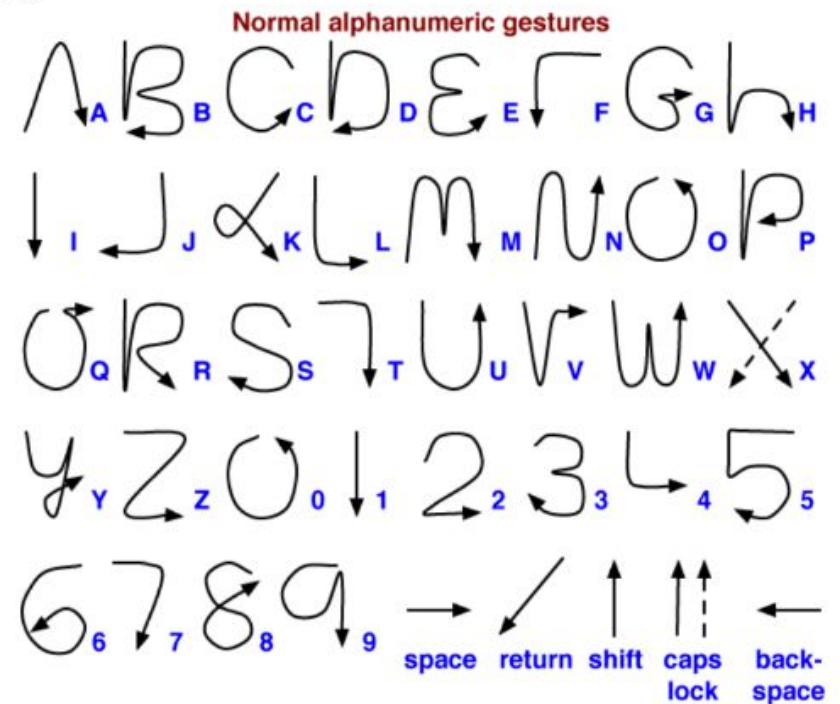
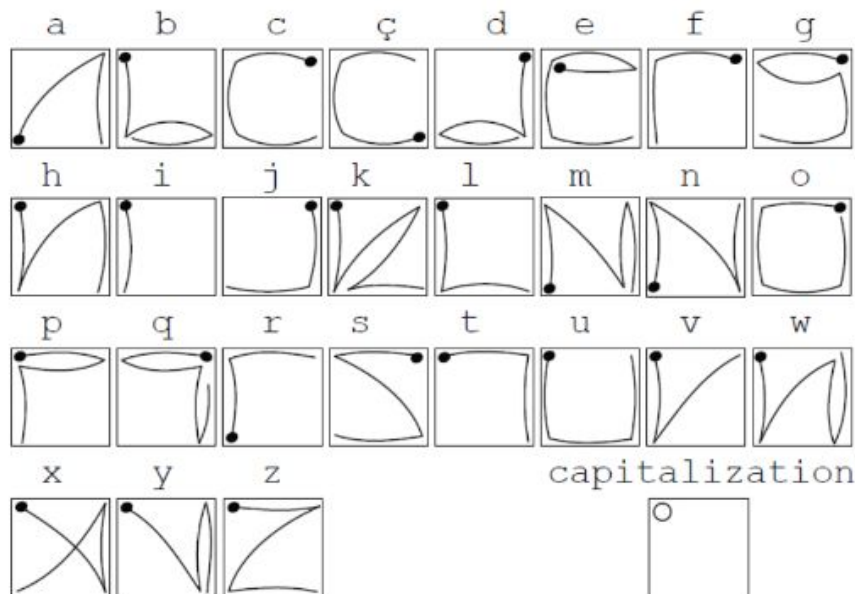
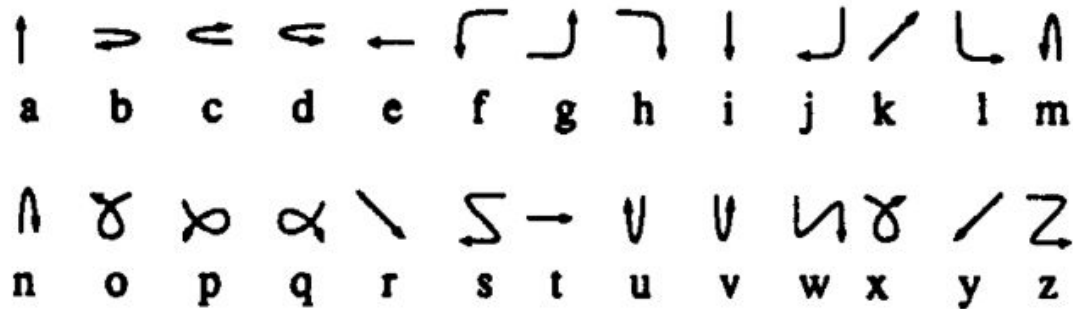


Fig. Gesture text input for English, Unistroke, EdgeWrite, Graffiti

• HCI/User_Interface

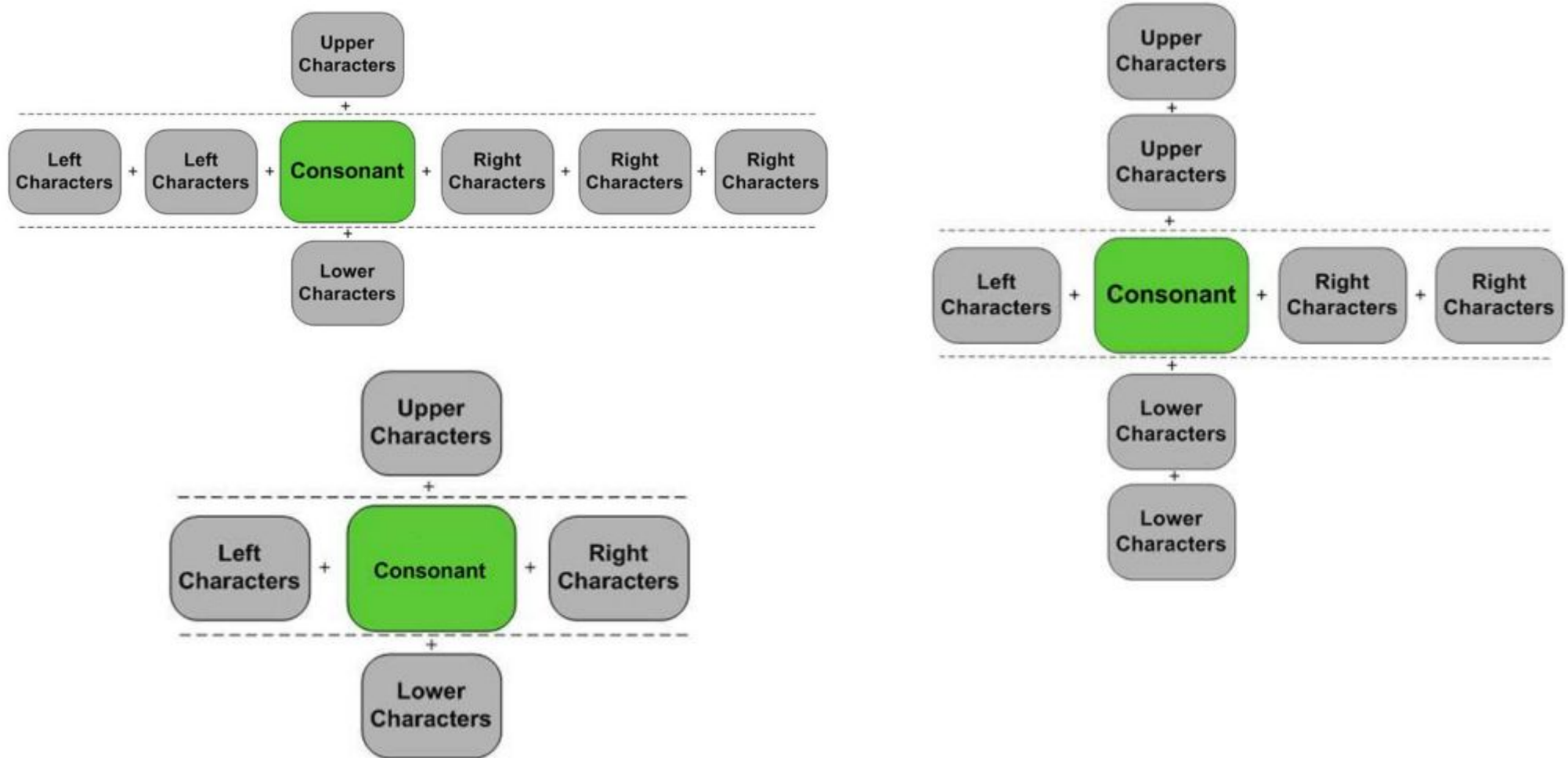


Fig. PG for Myanmar, Khmer and Bengali

. HCI/User_Interface

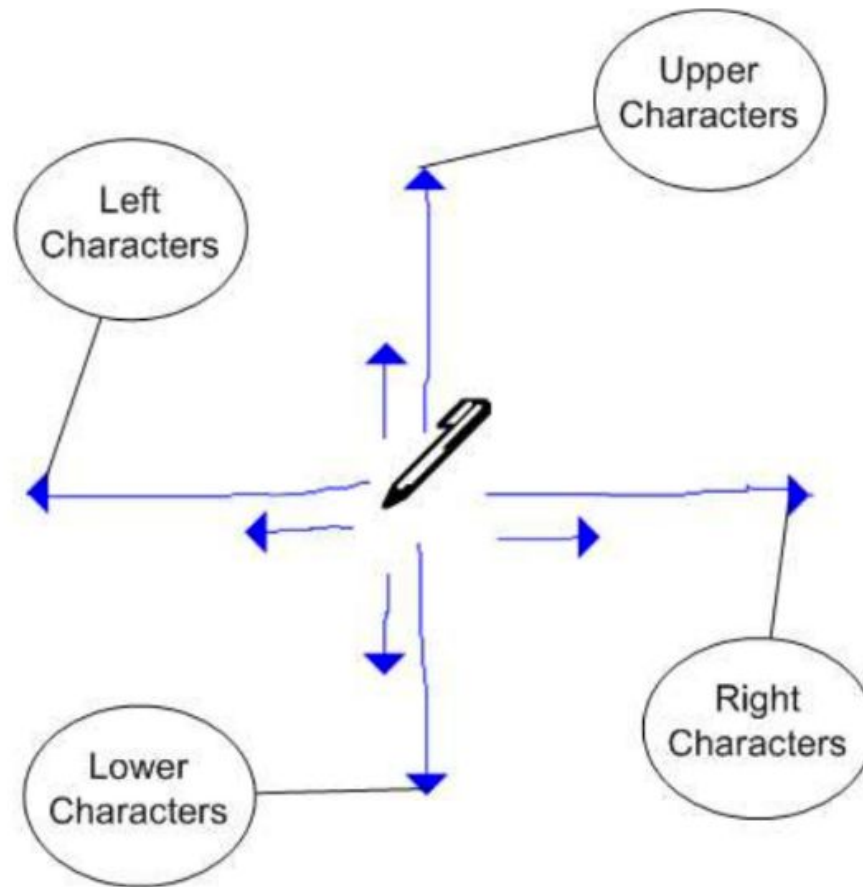


Fig. Concept of PG

.HCI/User_Interface

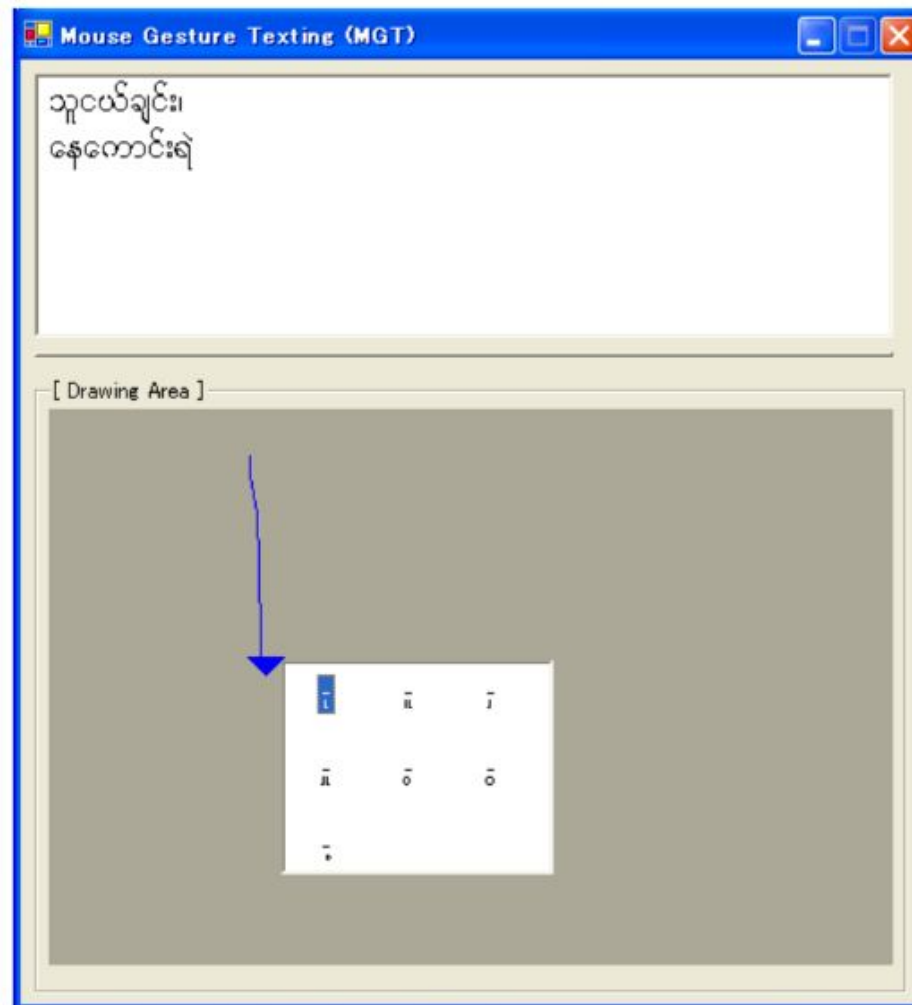


Fig. Positional Gesture typing example for Myanmar language

• HCI/User_Interface

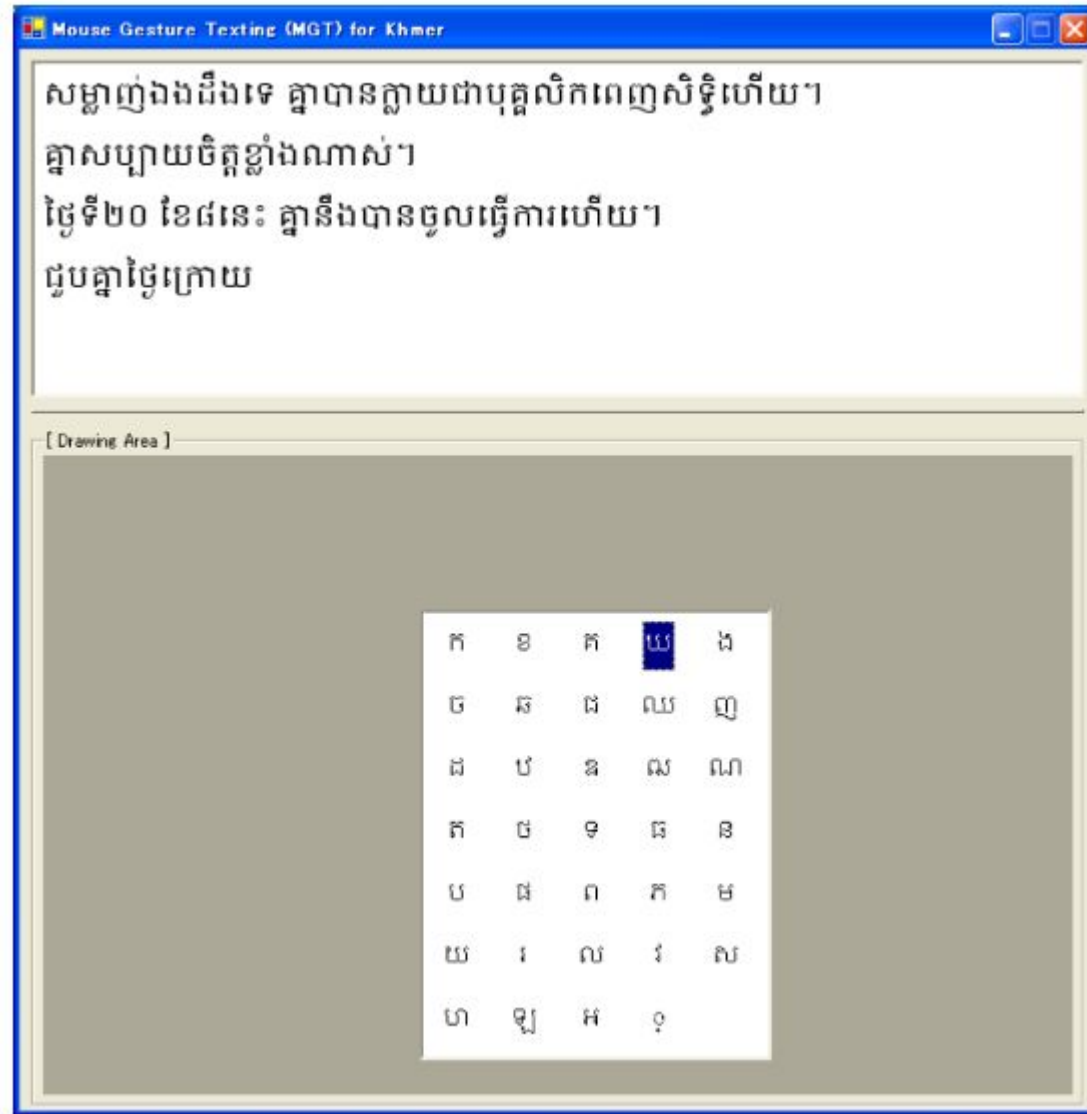


Fig. Positional Gesture typing example for Khmer

. HCI/User_Interface



Fig. Some photos of Positional Gesture user study photos

• HCI/User_Interface

Likert Scales (range 1-5)	PG with Trackball	PG with Mouse	Software Keyboard
Difficult-Easy	2.0 (1.22)	3.2 (0.84)	4.2 (1.30)
Painful-Enjoyable	2.6 (1.14)	3.6 (0.89)	3.8 (1.10)
Slow-Fast	2.0 (0.71)	3.4 (1.14)	3.8 (1.10)
Dislike-Like	2.8 (1.79)	4.0 (0.71)	4.0 (1.22)

Fig. Mean (standard deviation) responses by five Khmer users for five-point Likert scale questions

. HCI/User_Interface

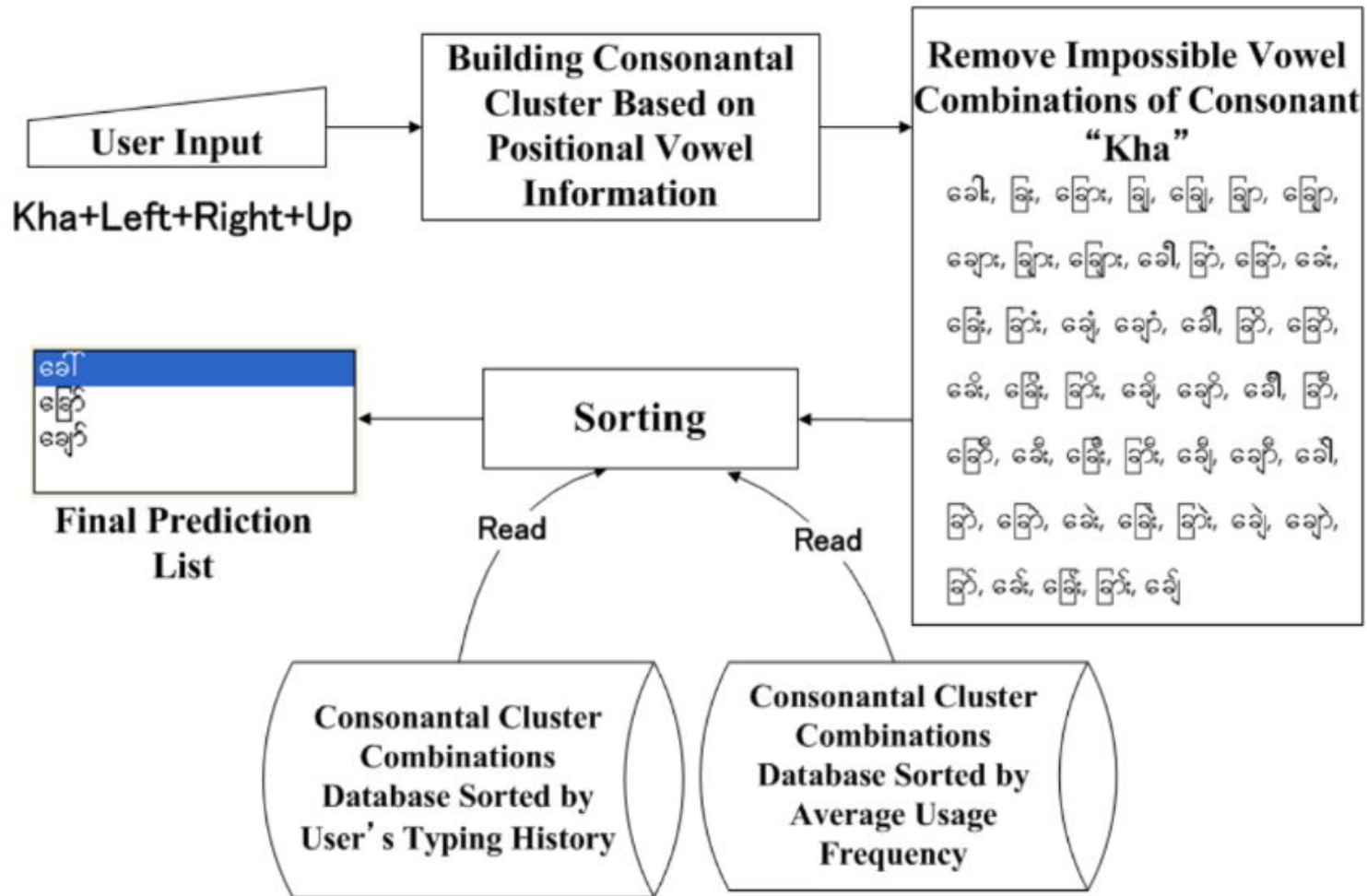


Fig. Process flow of Positional Prediction for Myanmar consonant "Kha" with vowel information (Left + Right + Up)

. HCI/User_Interface

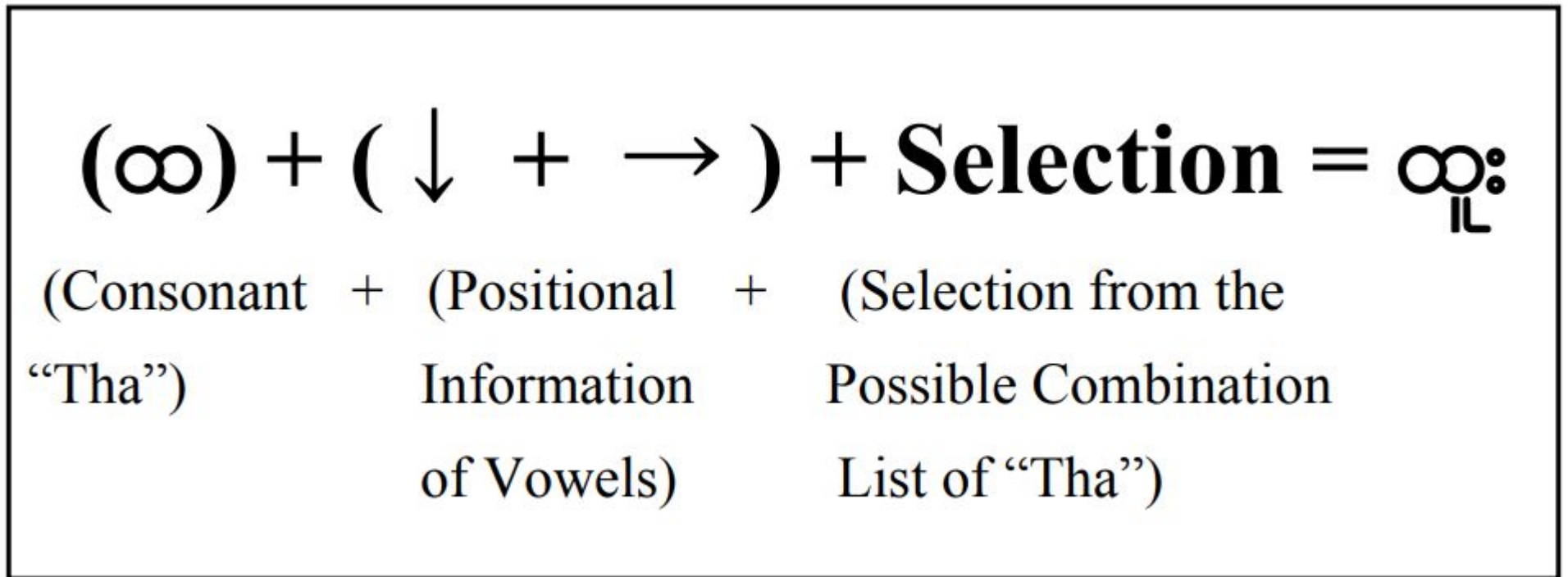


Fig. Typing Myanmar syllable “Htoo” with Positional Prediction

• HCI/User_Interface

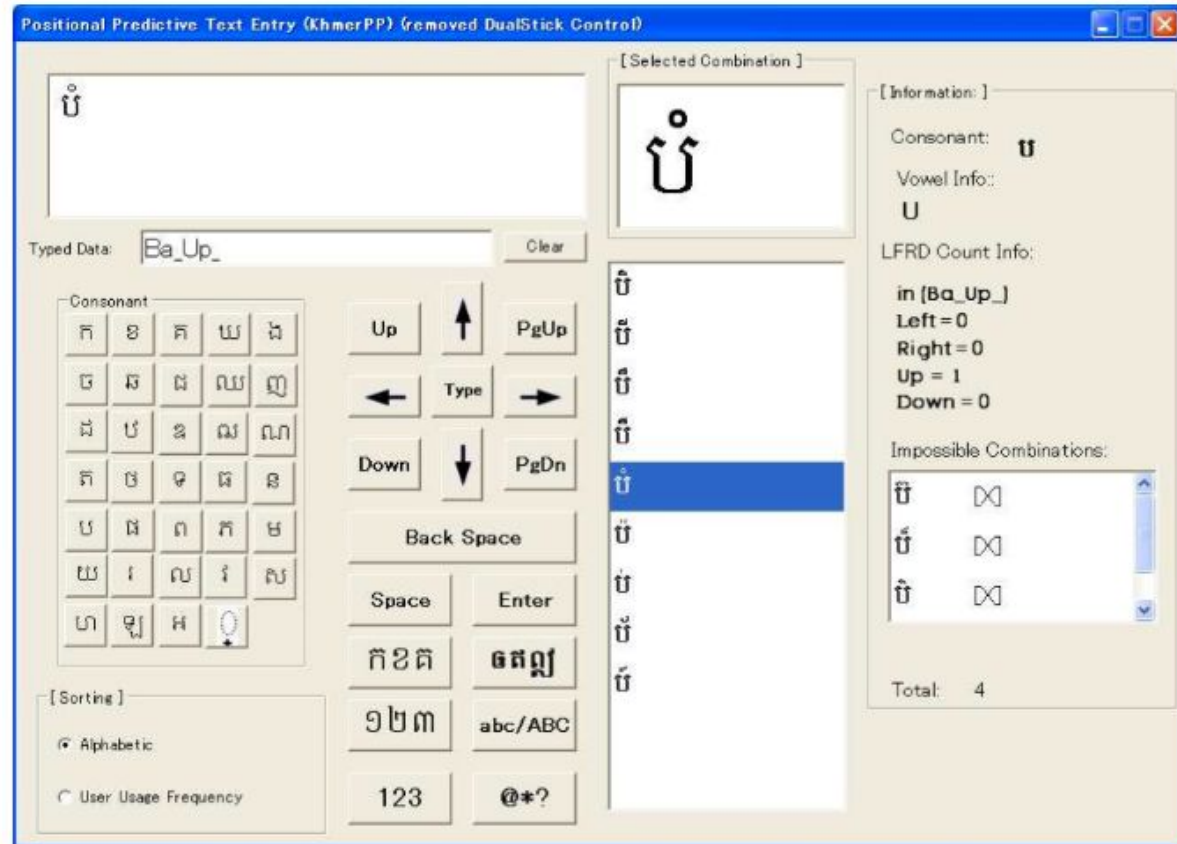


Fig. Positional Prediction prototype for (left) Myanmar and (right) Khmer

. HCI/User_Interface



Fig. 4 directional arrow keys on Nokia N76 mobile phone, Dell X51 PDA, Sony PSP portable game player, XO laptop

.HCI/Machine_Translation

Some user study videos

~/ss2018/prototype/video/PP/

- NLP/Machine_Translation

Coffee Break !!! :)