

TAMIL KEY PAD DESIGN FOR SMS SOLUTIONS

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ABSTRACT

India is one of world's largest markets for Mobile Phones. However the market is extremely fragmented with a high density in urban areas contrasting the low penetration in rural hinterlands. One reason for that is that much of the mobile content is in English and accessing this content is difficult for non-English speaking users because of the language barrier. Hence, there is a great need for providing applications and interfaces in one's own language to tap into this vast knowledge reserve. One of the ways to go forward is to accelerate the development of Interfaces in the local languages of the users. This paper presents an overall approach for language localization of mobile phones based on our Tamil SMS software developed with support from Tamil Virtual University. It helps mitigate the language barrier by providing local content interfaces to exploit the functionality of the mobile phones. In this we seek to go beyond the traditional Messaging oriented approaches and instead propose a complete interface in the local language-the classical language *Tamil*. Our Language localization in Mobile Phones initiative goes beyond a proof of concept. It seeks to place Tamil in its rightful place at the centre of all mobile phone communications. Thus, a hitherto unexplored domain is tackled in an innovative way by using technological developments of the Java technology and the rich ideas of the gaming industry.

The key contributions of this paper are that it presents the keypad design used in our Tamil SMS project.

KEYWORDS

Mobile computing, mobile phones, User interface, Messaging.

LITERATURE REVIEW

Traditionally, mobile phones have a fixed number of languages that are prepackaged in them. In India, English is commonly the default language. The mobile phone manufacturers support other languages such as Hindi, Urdu, Arabic, etc. Languages such as Tamil, Kannada., Malayalam which are supported by region specific models and are not universal. For e.g. an SMS composed in Tamil on Samsung phone [5] or a Reliance phone will be displayed properly in a similar phone. For other models they are displayed or displayed as non-editable picture messages. In a market where there are multiple popular manufacturers such as Nokia, Samsung and Sony Ericsson, this creates unacceptable manufacturer dependent incompatibilities.

If the phone models do not support Tamil, then one recourse of the user is to download the fonts on to the mobile phone and use it. This however can be done only for high end PDA phone models only. (Then too the fonts have to be Unicode enabled else the normal interface fonts will become un-understandable to the user. It'll be like Eg: aRw#\$aU coz it doesn't recognize Unicode characters)

Thus from a user's point of view what will be ideal is a method by which the software for language localization resides on the mobile phone and be used when needed. For this, there are two major initiatives similar to our initiative. Oli SMS in Singapore [5], Airtel's Tamil SMS service and Arichchuwadu **Tamil** Messaging [6] (actually developed by Microimage solutions). While Oli's solution relies on transliteration similar to the Nokia's Tamil enabled phone's approach (User types in English. This is then converted to Tamil and sent), Airtel's approach is service provider dependent (It will work only on Airtel networks).(Interface menus are purely in English which reveals the fact its not actual Language Localization. So the user can't proceed with messaging in tamil unless he has good English knowledge to know which menu option performs what action) Also Airtel's approach towards keypad display design is divergent from the Tamilnet 99 [7] usage. Nevertheless our solution provides a superior level of functionality than the above-mentioned solutions in that

- The keypad design is standardized and conformant to the principle of easy usage
- The software is service provider independent
- The software is manufacturer independent
- The software is adaptable (Same software can be used on multiple platforms without any change in code) Forward compatible
- The entire application is user friendly with special help facilities and features
- The solution can work across the boundaries of nations and platforms

TAMIL KEYPAD DESIGN USED IN THE PROJECT

After interaction with the experts in Tamil Virtual University and analyzing the proceedings of the Tamil Internet 2004 conference [1,2,3], we have used the following keypad design in our project.

1 கஙச	2 ஞடண	3 கநப
4 மயர	5 லவழ	6 ளறன
7 அஆஇஈ	8 உஊஎஏ	9 ஐஒஓஔ
* ஃஔ . , ஸ்ரீஜஷ	0 space	#

Actual look of a Tamil Phone:



Composing a message using this keypad:

- The keyboard has the twelve vowels \ddot{u} to $\text{ā}^{\text{+}}$, the aaytham, the eighteen pure Tamil consonants combined with the first vowel \ddot{u} , the five grandha consonants combined with the vowel a (sa,sha,ja,ha and ksha), and the letter shri. The pulli which symbolizes a pure consonant is provided as a separate key (lower case f). Let us call a consonant combined with the vowel \ddot{u} as a consonant symbol.
- The 12 vowels are implemented in the number positions 7,8,9 with 4 characters to a position. The 18 consonants are implemented in positions 1-6, with three characters for each position.
- For generating a vowel or a consonant, the number in which it occurs followed by its position is pressed.

For க, 3, 1

1 கஙச	2 ஞடண	3 சுநப
4 மயர	5 லவழ	6 ளறண
7 அஅஇ	8 உஉஎஏ	9 ஐஔஓ
*	0	#

|

1 கஙச	2 ஞடண	3 சுநப
4 மயர	5 லவழ	6 ளறண
7 அஅஇ	8 உஉஎஏ	9 ஐஔஓ
*	0	#

!

For uyirmei characters மி for example, 4,1 for ம

1 கஙச	2 ஞடண	3 சுநப
4 மயர	5 லவழ	6 ளறண
7 அஅஇ	8 உஉஎஏ	9 ஐஔஓ
*	0	#

1 கஙச	2 ஞடண	3 சுநப
4 மயர	5 லவழ	6 ளறண
7 அஅஇ	8 உஉஎஏ	9 ஐஔஓ
*	0	#

- Now ம is generated.
- Then இ is generated using 7,3.

If we need மடி, then we use # to split them.

- A consonant symbol followed by the pulli produces a pure consonant, e.g க+(புள்ளி) → க்

For pulli, the consonant symbol first மு is generated using 5,3.

1	2	3
கங்ச	கூடண	கூர்ப
4	5	6
மயர	லவழ	ளறன
7	8	9
அஅஇஊ	உஉஎஎஏ	ஔஔஔ
*	0	#

1	2	3
கங்ச	கூடண	கூர்ப
4	5	6
மயர	லவழ	ளறன
7	8	9
அஅஇஊ	உஉஎஎஏ	ஔஔஔ
*	0	#

Now using *,1 pulli is generated.

1	2	3
கங்ச	கூடண	கூர்ப
4	5	6
மயர	லவழ	ளறன
7	8	9
அஅஇஊ	உஉஎஎஏ	ஔஔஔ
*	0	#

1	2	3
கங்ச	கூடண	கூர்ப
4	5	6
மயர	லவழ	ளறன
7	8	9
அஅஇஊ	உஉஎஎஏ	ஔஔஔ
*	0	#

மு

Thus, the keymap algorithm we propose works uniformly on the major key-minor key algorithm.

The various combinations of characters are given as follows.

<u>S.No</u>	<u>Character</u>	<u>Number of keypresses</u>	<u>Example</u>
1.	Uyir and Mei	2	<ul style="list-style-type: none"> • ஸ -> 3,3 • ஏ -> 8,4
2	<u>Pulli</u> Characters	4	ழ -> 5,3,*,1
3	Uyir mei	4	ஔ -> 1,1,9,3
4	Mei followed by Uyir	5	ஸே -> 3,3,8,4,#

There are no timers that govern the operation of keypresses. Viz. for ஔ, after pressing 3, the user can press the next key anytime after the first key press.

The major key – minor key algorithm is a simpler solution as compared to the multi tap method as it is uniform and easy to use. The detailed comparison with the multi-tap method will be presented during the conference.

CONCLUSION AND FUTURE WORK

With the dramatic increase and sophistication of mobile communications devices such as cell phones comes the demand for applications that can run on those devices. The Tamil SMS software is a step in that direction for providing local language content for the masses. The next step is to expand mobile communications devices from voice communications to applications traditionally found on laptops and PCs such as the ability to send and receive email, store and retrieve personal information, perform sophisticated calculations and play games in their local languages.

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