

T9 Method Implementation and Bangla Text Input Technique for Short Message Service on Mobile Devices

Mostofa Kamal Nasir, Md Rashadul Hasan Rakib, Md. Sazzad Hossain, and Md. Belayet Ali

Abstract— Now at the age of information technology for fast Mobile Text Entry the implementation of t9 method for Bangla sms is necessary. Nowadays, people don't have time to press a key many times to enter a single character. T9 technologies can provide reasonable input speed. T9, which works with a built-in dictionary and requires a single key press, was developed to be more efficient and less time-consuming than mere character-number matching multitap input. For enormous users of Bengali languages whole over the world there is an urgent need for developing predictive texting solutions. In this paper, we describe a Bangla text input method and Predictive Text entry on reduced keypads.

Index Terms—T9, FIFO, SMS, OS, CE, JAVA, KEYPAD, END, GSM.

I. INTRODUCTION

Bengali, an eastern Indo-Aryan language with around 211 million speakers in Bangladesh, the Indian state of West Bengal and also in Malawi, Nepal, Saudi Arabia, Singapore, Australia, the UAE, UK and USA. Mobile messaging or short message service (SMS) is one of the popular ways to communicate. The trend of using text messaging on mobile phones has grown rapidly in the last decade. It is instant and also we can send message from Bangladesh to al-most all other countries. There is no language Preference to send or receive messages. So users who are unable to understand English they have the facility of sending messages but they are unable to use it. Language preference for those people may increase the usability of SMS. However, mapping the alphabet to twelve phone keys introduces challenging ambiguities for text entry.

This challenge is exacerbated in bangla by the large

- **Mostofa Kamal Nasir** is serving in the Department of Computer Science and Engineering, Mawlana Bhashani Science and Technology University (www.mbstu.ac.bd), Santosh, Tangail-1902, Bangladesh E-mail: nasir405@yahoo.com
- **Md Rashadul Hasan Rakib** is serving in the Department of Computer Science and Engineering, Mawlana Bhashani Science and Technology University (www.mbstu.ac.bd), Santosh, Tangail-1902, Bangladesh. E-mail: rakibcse02@yahoo.com
- **Md. Sazzad Hossain** is serving in the Department of Computer Science and Engineering, Mawlana Bhashani Science and Technology University (www.mbstu.ac.bd), Santosh, Tangail-1902, Bangladesh. E-mail: sazzad_101@yahoo.com
- **Md. Belayet Ali** is serving in the Department of Computer Science and Engineering, Mawlana Bhashani Science and Technology University (www.mbstu.ac.bd), Santosh, Tangail-1902, Bangladesh.

phonetic alphabet and homophonic bangla characters. Due to the size limitation, text entry on a mobile phone has created interesting problems and become an active research area in Human Computer Interaction. Many text entry techniques and different interface designs have been developed to make text entry on mobile phones more efficient. Therefore, the Bangla text entry process represents a challenging and rewarding research problem. Predictive Text input techniques strive to reduce the input burden by predicting what the user is entering. This is accomplished by analyzing a large collection of documents – a corpus – to establish the relative frequency of characters, digrams (pairs of characters), trigrams, words, or phrases in the language of interest. These statistical properties are used to suggest or predict letters or words as text is entered. Predictive input technologies have the capacity to significantly reduce the effort required to enter text – if the prediction is good. The characteristics of the text users enter are dependent on the application used to create the text. For example, we expect more formal prose using a word processor than an e-mail application.

In section II We describe about the proposed technique for text input. Here we describe out Problems for text inputs and explain how we could overcome this problems. In section III we make a comparing between traditional text input technique and our proposed texts input technique and then limitation and future improvements in section IV and finally conclude in Section V.

II. PROPOSED TECHNIQUES FOR TEXT INPUT

Problems for text input

In our Bengali language its minimal unit is a character, which can sometimes correspond to more than one pronunciation and more than one meaning. Due to the enormous character set, Bengali characters cannot be easily mapped to a keyboard for input into a computer system or an electronic device. To develop such application for mobile devices there are some limitations like there is no. standard Bangla key board layout which we all can follow. For this problem every one trying to follow their own key board layout which is disturbing for user they have to remember all of them. We need standardization moreover, due to limited screen space for choices to be displayed at once; this delay becomes more critical in the text entry process. The Bengali alphabet is a syllabic alphabet in which consonants all have an inherent vowel which has two different pronunciations,

the choice of which is not always easy to determine and which is sometimes not pronounced at all. Vowels can be written as independent letters, or by using a variety of diacritical marks which are written above, below, before or after the consonant they belong to. When consonants occur together in clusters, special conjunct letters are used. The letters for the consonants other than the final one in the group are reduced. The inherent vowel only applies to the final consonant

A. Solution for text input

In Bengali language there are 49 letters in which some are vowels and some are consonants. We have also some conjunct consonants, modifier symbols, numerals too. In our design for a standard mobile device keypad we assign all the Bengali letters, Modifier symbols and the numerals in the individual keypads according to figure 2(a).we have to made a database which will contains all the meaningful words. When we press the keypads in the mobile the corresponding Bengali letters will make the words according to permutation-combination rules. Then these words will be compared to our database. If any words match this word will be display otherwise not. If more than one word matches then the words will be display according to FIFO (first in first out) rules.

B. Flow chart for T9 implementation software in Bangla SMS

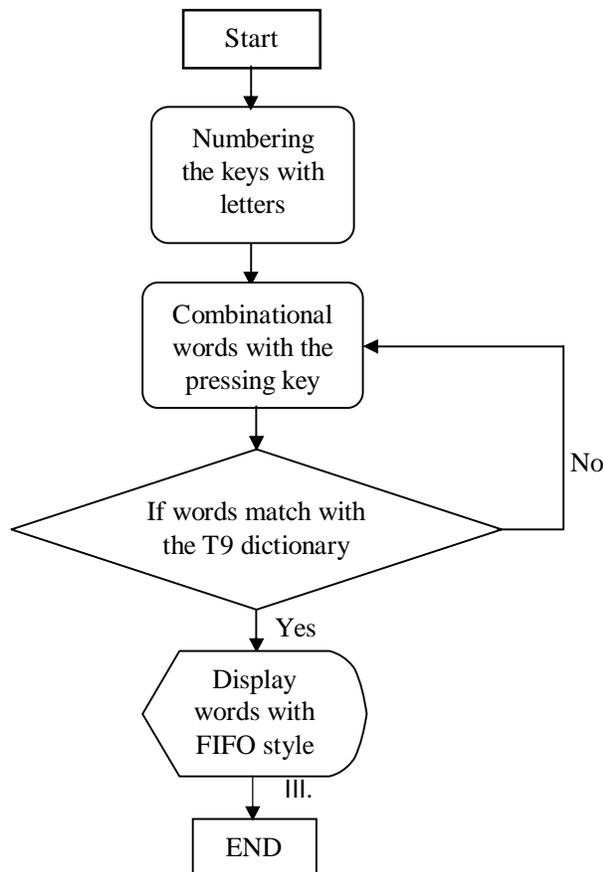


Fig. 1. Flow chart for T9 implementation

D. System implementation procedure

First step:

1. ক,চ,ট,ত,প,য,স,া,আ, newline,৯
2. ব,ভ,ঠ,ধ,ফ,ব,হ,ই,ি,ং
3. গ,জ,ড,দ,ব,ল,ড়,ী,ঈ, ,ঃ
4. ঞ,ঝ,ঢ,ধ,ত,শ,ঢ়, ,ঊ,ঋ, ,
5. ঙ,খ,ব,ন,ষ,ষ্ম, ,ঊ,ঈ,ঐ
6. , ঞ, ঐ
7. (,)
8. ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ০
9. ,
- *. ১,২,৩,৪,৫,৬,৭,৮,৯,০, ,
0. , space

Numbering the keys

Second step:

1. Make combinational words with the pressing keys
2. For example at first we press '1' & '3' key and make the combination

1. ক,চ,ট,ত,প,য,স,া,আ, newline,৯
3. গ,জ,ড,দ,ব,ল,ড়,ী,ঈ, ,ঃ

Combinational words are as follows:

কাগজ, কচট, পাতকা, পবাস, জগৎদল,গকাজ,বলদ,
টাকা,দলব,জাকটাপ,তাকাপো

Third step:

We will make a database using the file which contains the meaningful words.

Suppose we make the database as follows:

```

KvMR
cUf~wg
UvKv
RMr
`j
ej
cZvKv
Kjg
  
```

Fourth step:

Compare the words which we find in second step with this database and make another database with the matching words. after comparing we find this words.

Meaningful words are:

কাগজ, পতাকা, জগৎ, টাকা, বলদ, দল

Fifth Step:

Now display the words with FIFO (first in first out) style.

IV. COMPARISON BETWEEN TRADITIONAL TEXT INPUT METHOD AND OUR PROPOSED T9 TEXT INPUT METHOD

A transition time between characters can be set according to our convenience. It is very important that we need to press the key 1 thrice within that transition time in order to get the desired letter. The same procedure needs to be followed for the construction of a word and thereby completing a sentence.

Let us consider the word evsjvꣳk. The steps followed are listed below:

1. ক,চ,ট,ত,প,ম,ল,।,আ, newline,৭	2. খ,ছ,ঠ,থ,ফ,ব,হ,ই,৯,ং	3. গ,ঝ,ড,দ,ন,ম,জ,ী,ই, ,৪
4. ব,বা,ঢ,ঢ,প,ত,শ,চ, ্,উ,৩,°	5. ঙ,এ,ঊ,ঋ,ঌ,ৠ,ৡ,ঔ,।,আ	6. ্ব, ্ব, ্ব, ্ব

Key 4 is pressed once to get N
Key 2 is pressed six times to get i

Our proposed T9 method:

In this method to get the required word we have to press the keys in which the letter is present only once. Here in order to type the word evsjvꣳk the following needs to be followed. Key 4 is pressed once to get N. Thus the number of key presses is drastically reduced from 7 times to 2 times which is an approximately 80% reduction in key presses as well as time.

Method of implementation	Number of key presses
Normal input texting method	7
Our proposed T9 method	2

V. LIMITATIONS AND FUTURE IMPROVMENTS

In this paper, we have traced the need for predictive texting and examined the problems involved in developing predictive text solutions. The database which contains the meaningful words where the number of words are limited. In future the number of words can be increased to make it suitable for messaging. The application will works only mobile devices based on Symbian OS, Microsoft Windows CE or Java enable. So there is a restriction for users. So to get full benefit we need to be update with technological improvements. The application does not include any intelligent input system or spell checking. Writing Bangla in a mobile device is much more complicated then writing in a computer. It will reduce key pressing and also time to write a SMS. We also need to concentrate to the receiver end of SMS. Because in receiver end there is also need an application to view the content of the SMS that is Bangla. To implement such application we can use character to image or bitmap conversion logic for mobile devices that don't have our requirements. If we can use character to image or bitmap convert processing to send SMS then receiver may able to see the content from mobile devices, which support image or bitmap.

VI. CONCLUSION

One of the Challenges of send and receive Bangla SMS is that mobile phones with support of Java which has high price. Most of the mobile phone users in Bangladesh are unable to buy a mobile phone that has such features. For this such application may not a good solution but as technological improvement is increasing and everybody is looking forward we also have to cope up with improved technology to be beneficial. This application also can be integrated by mobile providers through which deployment process can be omitted.

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Mostofa Kamal Nasir has been serving as an Assistant Professor and chairman of the Department, Department of Computer Science and Engineering, Mawlana Bhashani Science and Technology University (www.mbstu.ac.bd), Santosh, Tangail-1902, Field of Interest is Artificial Intelligence, Mobile WiMAX and NLP. E-mail: kamal.mostofa@gmail.com



Md. Rashedul Hasan Rakib received his B.Sc. (Engg.) in Computer Science & Engineering from Khulna University, Bangladesh, in 2007. Now he is a faculty member of CSE department of Mawlana Bhashani Science and Technology University, Bangladesh
E-mail: rakibcse02@yahoo.com



Md. Sazzad Hossain has been serving as a Lecturer in the Department of Computer Science and Engineering, Mawlana Bhashani Science and Technology University (www.mbstu.ac.bd), Santosh, Tangail-1902, Field of Interest is VLSI and Networking
E-mail: sazzad_101@yahoo.com



Md. Belayet Ali has been serving as a Lecturer in the Department of Computer Science and Engineering, Mawlana Bhashani Science and Technology University (www.mbstu.ac.bd), Santosh, Tangail-1902, Field of Interest is VLSI and Networking
E-mail: md.belayet@yahoo.com