ISSN:0975-9646

Kavita Agrawal et al, / (IJCSIT) International Journal of Computer Science and Information Technologies, Vol. 6 (5) , 2015, 4705-4708

Localization of SMS on Mobile Phones

Kavita Agrawal
Assistant Professor
CBIT Hyderabad

Arvind Kumar Chaubey
Senior Consultant
Hyderabad

V.M.Ruth
Assistant Professor
CBIT Hyderabad

***Abstract*-Mobile phones are being used by large number of people on a wide scale in day-to-day life. Generally the language in which sender sends the SMS, the receiver receives them in the same language. The local people residing in villages all over the country may not be familiar with English language or the language in which message has been sent by the sender. In this paper we propose an idea in which a person has an option to choose a language in which they want to receive the SMS on their mobile phone from all senders. Suppose a person knows the local language (e.g. Hindi), then the entire SMS received by them in their inbox will be in local language i.e. Hindi only.**

Likewise if they reply to the received message in their local language (e.g. Hindi), that should be converted into the language in which the sender send him the message. So by this way we can minimise the language gap between two people and they can easily communicate with each other .Here, we will use the Machine aided translation system available on the web for mobile phone with a different interface to provide interpersonal, domain specific communication across language barrier.

Keywords: **SMS, Machine Translation.**

I. INTRODUCTION

Short message service is a widely used communication mechanism for cell phone users now days. It evolved out of the global system for mobile communications standard, an internationally accepted cell phone network specification the European Telecommunications Standards Institute created. SMS messages are handled via a short message service center that the cellular provider maintains for the end devices [1].

It is a mechanism of delivery of short messages over the mobile networks. It is a store and forward way of transmitting messages to and from mobiles. The message (text only) from the sending mobile is stored in a central short message center (SMS) which then forwards it to the destination mobile. This means that in the case that the recipient is not available; the short message is stored and can be sent later. Each short message can be no longer than 160 characters. These characters can be text (alphanumeric) or binary Non-Text Short messages. An interesting feature of SMS is return receipts. This means that the sender, if wishes, can get a small message notifying if the short message was delivered to the intended recipient. Since SMS used signalling channel as opposed to dedicated channels, these messages can be sent/received simultaneously with the voice/data/fax service over a GSM network. SMS supports national and international roaming. This means that we can send short messages to any other GSM mobile user around the world.

II. BACKGROUND

A.SMS (Short message service): The working of SMS is as follows:

In current cellular networks, SMS messages are transmitted over the Common Channel Signalling System 7 (SS7), which is the digital signalling control network used by network elements of wire line and wireless telephone carriers to exchange control information for call setup, routing, mobility management, etc. Figure 1 shows the typical network elements and architecture employed for handset-to-handset communication (Point-to-Point SMS). Conceptually, the network architecture is split into two segments. The elements at the sender, i.e., the Mobile Originating (MO) part, include the Mobile Station (MS) of the sender, the Base Station (BS) that provides the radio infrastructure for wireless communications, and the Originating Mobile Switching Centre (MSC) that manages routes and switches all traffic into and out of the cellular system on behalf of the mobile device of the sender. The elements at the destination of the message, more often known as the Mobile Terminating (MT) part, also feature a base station and an MSC (Terminating MSC) for the receiver. In addition, an SMS Centre (SMSC) acts as a centralized, store and-forward server that is responsible for accepting, storing, retrieving subscriber information, and forwarding messages to the intended recipients of the messages. It is assisted by two databases, namely the Home Location Register (HLR) and the Visitor Location Register (VLR), in which location information is kept regarding the subscribers and their mobile devices [2].

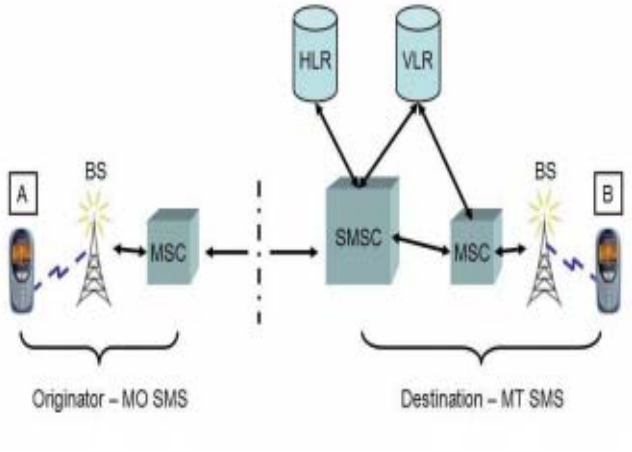

Figure 1: Typical handset-to-handset network architecture for SMS

B. Machine Translation

In the past when we had to figure out the meaning of a word from another language, we made use of a dictionary. Not only was this a very time consuming task but it was kind of irritating owing to the fact that it was difficult to interpret the meanings. Moreover, when an entire paragraph or note had to be translated, this could be very difficult because one word had several meanings. So what to do? That's where the machine translator came into the picture.

The principal focus of the Natural Language Processing group is to build a machine translation system that automatically learns translation mappings from bilingual corpora. Machine translation is the translation of text by a computer, with no human involvement. Pioneered in the 1950s, machine translation can also be referred to as automated translation, automatic or instant translation [3].

There are two types of machine translation system: rules-based and statistical:

- Rules-based systems use a combination of language and grammar rules plus dictionaries for common words. Specialist dictionaries are created to focus on certain industries or disciplines. Rules-based systems typically deliver consistent translations with accurate terminology when trained with specialist dictionaries.
- Statistical systems have no knowledge of language rules. Instead they "learn" to translate by analysing large amounts of data for each language pair. They can be trained for specific industries or disciplines using additional data relevant to the sector needed. Typically statistical systems deliver more fluent-sounding but less consistent translations.

III. Proposed Solution

There are two scenarios (Refer figure 2)-

1. Sender 'A' sends text to Receiver 'B'. Mobile app will check the preferred language of 'B'. If the preferred language of B is same has 'A', then no need to translate. If the B's preferred language is different from A's language, then app will get the language of both A and B. After that it will translate the message send by A to B's preferred language.

    a. While checking the preferred language of A and B, app will have internal database which will be having the list of language. If the app is unable to interpret the language of text, then it will contact Google cloud to get the language of text.
    b. Once app done with translating the A's text, it will store the preferred language of sender's mobile language.

2. If B wants to reply to A's message, he can simply do reply and write his message in his own preferred language.
    a. While sending the message from B to A, the app will check the preferred language from A (from step 1.b) and once again translate the message to A's preferred language.

Above idea will hold well in case of SMS, Email, or any kind of text. This will break the language barrier between two end users irrespective of their culture difference.

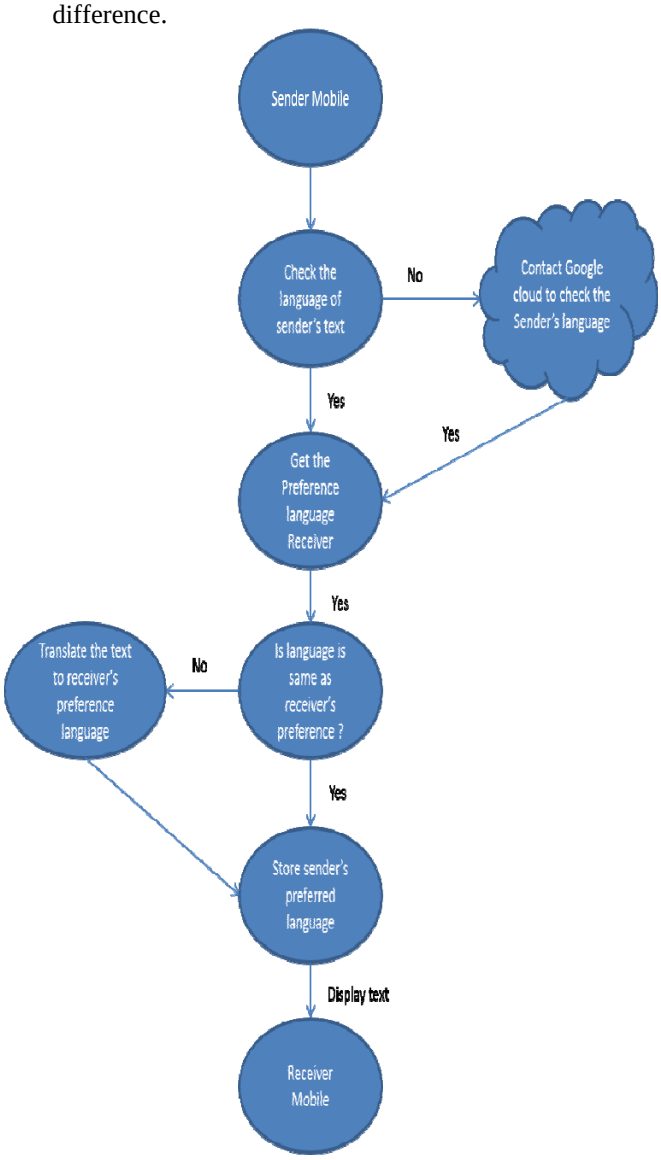

Fig 2: Flow Diagram

IV. Implementation

1. Application Flow:

Idea proposed will have two flows –

a. Message from Sender to Receiver (refer Fig3)
b. Reply message from receiver to Sender(refer Fig4)

a. Sender to Receiver Flow-

Email/SMS will be sent from sender's mobile through mail application or SMS. The Language Preference Plug-in will be embedded to SMS/Email receiver client. So if any Email/SMS will come, the client will check the Language Preference Plugin and update it accordingly. If the user is having particular preference, in that case it will pass on to Translator Plugin, which in turn will translate and send it to the Receiver's email/SMS client.

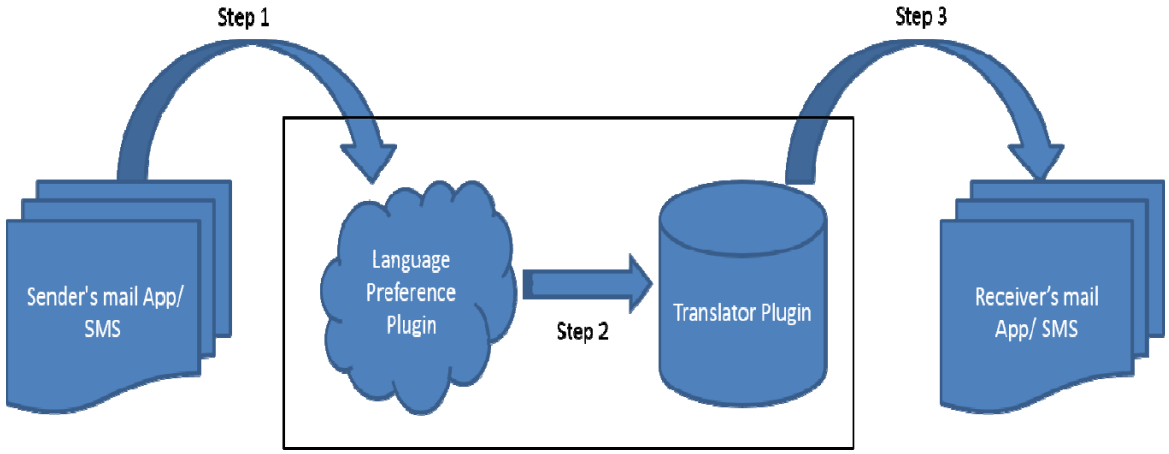

Fig3. Component flow of message from sender to receiver

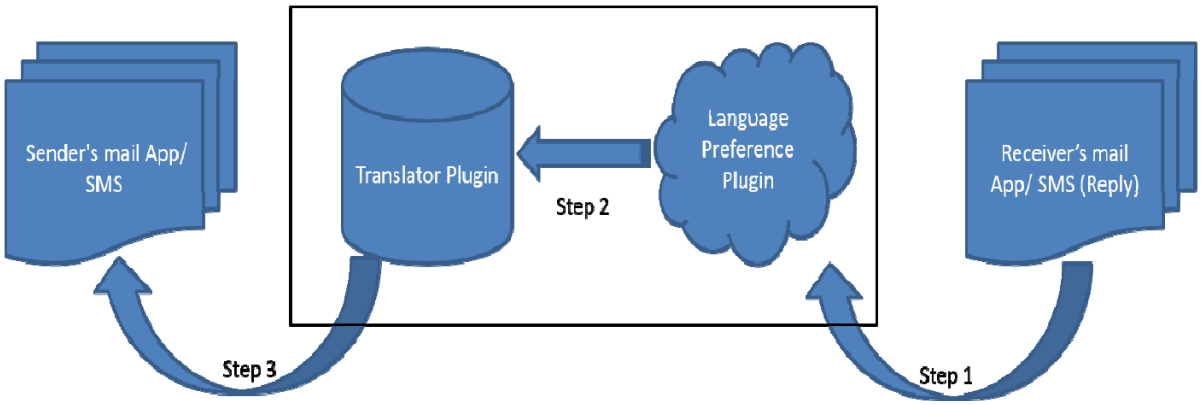

Fig4. Component flow of reply message from receiver to sender

b. Receiver to Sender Flow-

Receiver will reply to Sender's Mail/SMS through app. The Language Preference Plug-in will identify the Sender's preference language and pass on to Translator Plug-in, which in turn will translate the message and sent it sender's mobile.

2. Component Overview: It includes the following component:

(i) Sender's mail App/SMS: This component is responsible for sending text/mail to receiver. Sender can send text/message in any language

(ii) Language Preference Plug-in: This is the core part of application which will be responsible for setting up default language of end user. The mobile app will check below things-

a. This will be embedded to SMS/Email client.
b. Checking what is the default language of the end user i.e. Receiver's mobile
c. Identifying the language of sender's message
d. If it's unable to identify the sender's message language, it will contact Google cloud to get the details of language.
e. Storing default preference of sender's language for future use.

(iii) Translator Plug-in: This component is responsible for translating the message into receiver's preferred language i.e. details received from Language Preference Plug-in. This layer will also translate message of receiver according to the preferred language of sender (Mobile app will store sender's language preference

(iv) Receiver's mail App/SMS: This component is the end user i.e. receiver's mobile which will be finally getting the translated message from sender.

V. CONCLUSION

SMS provides a very easy way of exchanging small bits of information between mobile users. The reasons for the popularity of SMS service is the fact that this mechanism of sending and receiving messages not only saves time but costs less as well. In many situations one is relatively much more comfortable sending a message via SMS than talking over phone. With new information services and unique value added services being used by the operators the popularity of SMS is increasing further. Using an open source language translation package automatic language translation for SMS text can be easily achieved. This approach will allow mobile operators to provide textual message delivery in a user's native language

REFERENCES

[1] .SMS: The Short Message Service by Brown, J. ; Shipman, B. ; Vetter, Ron in Dec. 2007.

[2]. A Study of the Short Message Service of a Nationwide Cellular Network by Petros Zerfos Deutsche Telekom Laboratories Xiaoqiao Meng, Starsky H.Y Wong, Vidyut Samanta, Songwu Lu UCLA Computer Science Dept. Los Angeles, CA, 90095, USA 2006.

[3]. Mobile Interface for Domain Specific Machine Translation Using Short Messaging Service Agrawal, A.J. ; Chandak, M.B. Information Technology, 2007. ITNG '07. Fourth International Conference on blication Year: 2007.

[4]. Automatic language translation for mobile SMS S. K. Samanta, A. Achilleos, S. R. F. Moiron, J. Woods and M. Ghanbari School of Computer Science and Electronic Engineering University of Essex, Colchester, CO4 3NU, UK in 2007.

[5]. Saran, M. Cagiltay, K. and Seferoglu, G. 'Use of Mobile Phones in Language Learning: Developing Effective Instructional Materials', Fifth IEEE International Conference on Wireless, Mobile, and Ubiquitous Technology in Education, 23-26 March 2008.