

Chapter 3

Automatic Language Translation for Mobile SMS

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ABSTRACT

In any form of communication it is vital that both parties can understand the same language, if they cannot a translator is required. Currently mobile users engage the service of a third party provider to translate an SMS text into a different language. The existing services have a number of drawbacks e.g. high cost to the user; not user friendly, they reduce the message space, and are inefficient. To communicate with a foreign person the sender must know the recipients preferred language and device display capability. What is needed is a service where a sender can send message in their native language without regard for the target tongue. We show that a mobile operator can provide a transparent service where the text message is automatically converted to the recipients preferred language. In comparison to the existing system, our implementation is efficient and cost effective and has large implications for commerce, language learning and person-to-person communication. A large number of services such as health care management, education, emergency notification, news, weather, and traffic reports and commerce applications can be delivered to vast mobile populations who are not able to enjoy the benefit of these services due to language barriers.

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INTRODUCTION

Information and Communication Technology (ICT) is one of the key drivers in global economic growth. In economic terms, ICT facilitates transactions between the seller (i.e. information providers) and the buyer (i.e. information seekers). It appears that economic growth is highly correlated with the growth of ICT services in countries world wide. Current research (Sridhar & Sridhar, 2007) indicates that a 1% increase in telephone penetration (i.e. percentage of population with a telephone) can increase the gross domestic product (GDP) of a country by 0.14%. It can be argued that economic development does not come from telecom service penetration but from the transactions. The efficiency of the transaction can be improved if done by individuals in their preferred (i.e. native) language. This research provides a platform where individuals can transact/communicate in their preferred language irrespective of the language of the other party and hence enhance their quality of life and business.

The need for language translation began when people started travelling from place to place and the first documented cases are between the 3rd and 1st centuries b.c. In modern times, telecommunications have allowed global interaction without the need to travel at all. Currently more than half of world's population has a mobile phone and access to the global facilities (ITU, 2009). Some people use messaging services (e.g. short message and e-mail) more often than conventional voice calls. The mobile short messaging service (SMS) provides a convenient platform where the message can be delivered even if the recipient's phone is engaged in voice communication.

Clearly not all people understand the same language and a textual message in the wrong language may be meaningless. Some messages are generated automatically and generally sent in one language, so many of the recipients may not understand. What is needed is a service that performs language translation according to the

preferred language of the recipient, without them even knowing. The literature has focused on SMS language translation; where the service is implemented either in the mobile device (Agrawal & Chandak, 2007) or in the network (Chava et al., 2007; Moka LLC, 2009). For translation in mobile devices an appropriate software interface such as Java Micro Edition (J2ME) is needed. This generally limits the number of languages which can be translated. Therefore devices with larger memory and high processing capability are required (e.g. phones with Symbian or Windows Mobile operating systems) which tend to be costly and can be a barrier to some people. Mobile users can avail the translation service without a costly handset if the translation is performed in the network.

Currently network SMS language translation is done at a centralized server usually belonging to a third party service provider. Mobile users who want to use the SMS translation service indicate the source and target language (e.g. Chinese to English) along with the actual text and then send the message to the service provider as an SMS message. After receiving the message the service provider translates the message and sends it back to the sender. This translation service is used for learning foreign languages and person-to-person communication; where the sender resends the translated message to the recipient.

The current implementation has a number of drawbacks and makes it difficult to deliver the messages which are automatically generated from applications (e.g. mobile commerce). In the current implementation the sender (e.g. mobile user) must have prior knowledge about the recipient's preferred language and or language display capability of the recipient's mobile phone. This increases the complexity if application generated messages are to be delivered in the recipient's preferred language. Using an open source language translation package and a database server we demonstrate that a mobile operator can provide a transparent service where text messages (both from mobile

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