Multilingual Information Service System for Tourists

Mahsa Mohaghegh[1], Abdolhossein Sarrafzadeh[2]
[1]School of Engineering and advanced Technology, Massey University of Auckland,
[2]Department of Computing, Unitec
m.mohaghegh@massey.ac.nz

Outline:

Globalization and the continued increase in international travel and commerce have made automatic speech-to-speech translation systems an attractive area of research and development. With handheld devices becoming more powerful, the idea of speech to speech translators on PDAs is becoming a practical proposition.

New Zealand welcomes a number of tourists from all over the world and tourism is a very important industry for New Zealand. New Zealand, a wealthy Pacific nation is dominated by two cultural groups New Zealanders of European descent, and the minority Maori, but Migration patterns have changed, with most incomers coming from Asia and Pacific island states, rather than from the UK and Australia. Officials estimate that Asians will make up 13% of the population by 2021. Developing a handheld speech to speech translator is therefore not only of economic significance but also of considerable social and cultural importance.

The aim of this project is to develop a speech to speech multilingual translator on a handheld device for the visitors and residents of New Zealand. The final system is intended to help users to speak their own languages and communicate with the local people in relevant situations, such as restaurant, taxi and emergencies using the handheld device. The user of the system will speak into a microphone provided with the handheld device which translates the spoken words into English and vice versa in real-time. The system will consist of an off-the-shelf handheld device, speech-to-text and text-to-Speech engines, and a statistical machine translation component as well as a server and a database as shown in Figure 1 below.

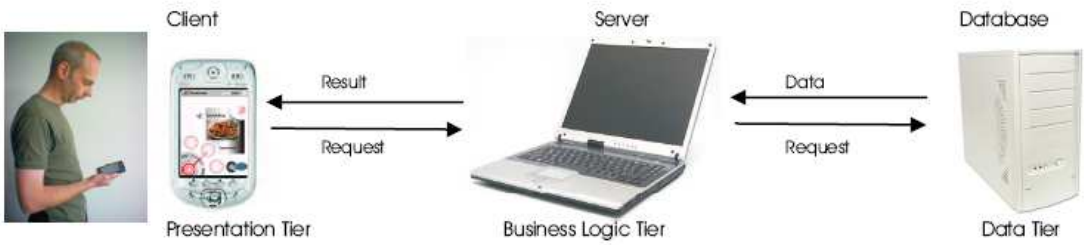

Figure 1. Key components of the proposed handheld translator

The key research issues to be solved by this project are:

- Intelligent multimodal user interface technologies ensure comfortable access via the small screens of handheld devices and smart phones and the limited

input options for handheld computers. Users can choose their input methods for search depending on the situation: via speech or writing and they can decide whether they want to read or hear the found information.

- The scientific and technical innovation of the system is to combine translation technology, speech input and output, personalization, situation-aware services and open semantic structure oriented architecture, so that users of handheld device are supplied anytime and anywhere with the best information in their own language. Services are related to accommodation, shopping, tourism, recreation, transportation and city information which is tied to local geographical information, based on the standard interface and distributed data warehouse and data mining technology.

Implementation:

Figure 1 in the previous page shows the component of the proposed system and the interconnection between them. These components will be implemented using a combination of Microsoft products (e.g. text to speech and speech to text engines, Windows, MS Access, etc.) and a statistical machine translation system which will be developed in-house. The statistical machine translation system will be developed using Moses which is a public domain statistical development tool the team is familiar with.