Voice-Based Mobile Information Retrieval Center

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Project Code: SMS (3081-2002)

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In our Final Year Project, we proposed to design and implement a speaker-independent **Voice-Based Information Retrieval Centre** that provided mobile end-users with **food guide service** by applying **speech recognition technology**. The language driven was Cantonese. Users could simply dial to the system with their mobile phones and say their choices directly with guidance provided. The system would then search for the desired real-time information from Internet. The information retrieved would be delivered to the users in Short Message Service (SMS) format. The scenario was shown as followed:

The Components of the system involved:

- Computer-Telephone Interfacing Programme (Dialogic Card)
- Speech Recognition technology
  - Data Collection
  - Acoustic Model
  - Speech Recognizer
- Information Retrieval Module (Internet)
- SMS Platform (GSM Network and Short Message Service Centre)
System Architecture

Initiation

INDEX:
ME: Mobile Equipment  HTK: Hidden Markov Model Tool Kit
SIM: Subscriber Identity Module  SMS: Short Message Service
UI: User Interface  SMSC: Short Message Service Centre
AM: Acoustic Model  HLR: Home Location Register

Fig 2. System Architecture
System Performance

System Output (SMS Message on the mobile phone)

Fig 3 SMS Message on Mobile

Accuracy

<table>
<thead>
<tr>
<th>Accuracy</th>
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<tbody>
<tr>
<td>Accuracy for Location recognition</td>
<td>95%</td>
</tr>
<tr>
<td>Accuracy for cuisine recognition</td>
<td>97%</td>
</tr>
<tr>
<td>Accuracy for country recognition</td>
<td>100%</td>
</tr>
<tr>
<td>Average Accuracy in Total</td>
<td>97.3%</td>
</tr>
</tbody>
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Table 1. Recognition Accuracy

Speed

<table>
<thead>
<tr>
<th>Average Speed for recognition</th>
<th></th>
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<tbody>
<tr>
<td>(without Garbage Rejection) for location and cuisine</td>
<td>1.3 seconds</td>
</tr>
<tr>
<td>(with Garbage Rejection) for location and cuisine</td>
<td>3 seconds</td>
</tr>
<tr>
<td>Short Message Service Delivery</td>
<td>Immediate</td>
</tr>
<tr>
<td>(After End-user’s Confirmation)</td>
<td></td>
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Table 2. Recognition and Delivery Time