Final Year Project (2005 - 2006)

**SM2a-05**

**Telephone Based Personal Security Alarm**

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People sometimes get lost during hiking. Government suggests that hikers should tell his family or friends the details of his journey before he starts his trip. However, it is difficult for his family or friends to check his situation at all times to make sure that he is safe, so we have developed a system to do this checking. Hikers can setup more than one alarm record in our system just like an alarm clock. If he does not cancel the alarm on time, the system will automatically contact his friends or family and report the information of his trip.

Fig. 1 Interactions between the telephone interface, the web interface and the database
The web interface is mainly implemented by 4 applications (Fig.2):

- Apache web server can display multiple web pages to users stably and dynamically.
- PHP, JavaScript and HTML are web scripting languages that create functional web pages.

MySQL is a powerful database manager that enables us to store and retrieve data with a scripting language such as PHP and C++.
The speech verification is as authorization. The results are as following.

<table>
<thead>
<tr>
<th>Model with Adaptation and Silent Detection</th>
<th>Error Rate of speaking 5 sentences</th>
<th>Error Rate of speaking 10 sentences</th>
<th>Error Rate of speaking 20 sentences</th>
<th>Error Rate of speaking 30 sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model with Adaptation and Silent Detection</td>
<td>7.5%</td>
<td>5%</td>
<td>4.5%</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

Therefore, the telephone interface requires users speaking 10 sentences for registration.

Speech recognition is to identify each word the user has said. When a user sets up an alarm through the telephone interface, the system can recognize over 82% of his speech correctly.

We have built a user-friendly web interface and telephone interface. Users can setup personal alarms through the two interfaces. The system is secure because the speech verification successfully works. It can accurately determine the user’s identity. The speech recognition process works efficiently to reduce the time of inputting information. We have completed the project successfully. We hope this system can help hikers to save their lives.