**Towards a system to aid communication with Deaf**

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**Abstract**

Towards a system to aid communication with Deaf is an experimental system that aims to aid communication between a deaf person and an ordinary person by translating the ordinary person’s speech to sign language. A speech recognizer recognizes speech from the ordinary person and the system then synthesizes the appropriate sequence of signs in American Sign language (ASL) using a specially developed avatar. By using a phrase lookup approach to language translation, which is appropriate for the highly constrained discourse in society, we were able to build a working system that we could evaluate. We summarize the results of this evaluation (undertaken by deaf users and Ordinary people), and discuss how the findings from the evaluation are being used in the development of an improved system.

**Contents**

1. **Introduction ………………………………………………………………………….1**

**3. Conclusion……………………………………………………………………………….3**

3.1 Summary…………………………………………………………………………………………………………….3

3.2 References………………………………………………………………………………………………………….4

**Introduction**

People who are Deaf have little or no hearing ability. The word “Deaf”, (often written with a capital “D”) typically refers to people who use Sign Language as a primary language – either directly with others who sign or indirectly through an interpreter with people who do not sign. They may hear environmental sounds, and may even understand some speech, but they identify with what is known as the “Deaf Culture” [1]. There has recently been considerable research activity in developing automatic systems which can understand and output speech to provide information services or to perform transactions with customers [2]. We have been developing a system which enable people to communicate with Deaf. It is an interactive translation system to assist in the completion of a conversation between an ordinary person and a deaf. The system translates the ordinary person speech into American Sign Language (ASL) and displays the signs using a specially-developed avatar. A comprehensive approach to the task of enabling humans who cannot sign to communicate using sign-language would clearly require the development of a general purpose speech to sign language converter. This in turn requires the solution of the following problems:

1. Automatic speech to text conversion (speech Recognition).
2. Automatic translation of English text into a suitable representation of sign language.
3. Display of this representation as a sequence of Signs using computer graphics techniques.

For many people who have been profoundly deaf from a young age, signing is their first language so they learn to read and write English as a second language [3]. As a result, many deaf people have below-average reading abilities for English text and prefer to communicate using sign language [4].

**Conclusion**

**Summary**

Our goal in developing this trial system was to establish whether the introduction of a limited speech-to-sign translation system for ordinary people would be beneficial to deaf whose primary means of communication was sign language. In addition, concatenation of signing is more fluent and controlled for avatar than for video signing, as the exact positioning of the avatar can be manipulated. For these reasons, we decided to display the signs using an avatar (3D character).

**References**

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