The TESSA Project

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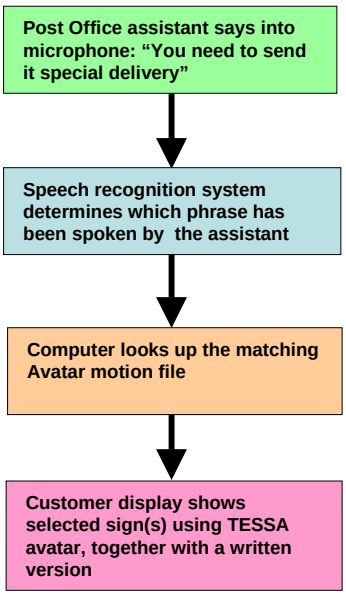
The TESSA System

TESSA, the TExt and Sign Support Assistant, has been developed to assist people who are deaf or hard of hearing in transactions at a Post Office.

The TESSA system combines speech recognition technology and state of the art virtual human animation to enable Post Office assistants to communicate with deaf customers. The assistant speaks into a microphone which is then recognised by a computer speech recognition system. The speech is converted to British Sign Language and signed by the virtual human for the customer. English text can also be displayed for those who do not use sign language.



Motion Capture

The movements of the virtual human are 'copies' of those of a native sign language user. Software specially developed for the project captures the signer's hand, mouth and body movements using a variety of electronic sensors. These movements are then stored and used to animate the avatar when required. The Royal National Institute for Deaf People are closely involved in the project. Their advice concerning the quality of the avatar and animation as well as information concerning the needs of deaf people have helped to shape the system's development.

Phrase Recognition and Translation

The project uses commercially available speech-to-text software, which has been optimised to work in a noisy Post Office environment with several different speakers. TESSA enables over 450 of the most frequent Post Office transactions including those involving variable quantities, such as money and days of the week, to be completed more effectively. A PO clerk does not have to use any exact form of words. The system "understands" what he or she is likely to have meant.

New signing lexicons can be produced so that the system may be easily adapted to other areas. Furthermore, TESSA has been developed around the principle that British Sign Language is simply another language. So the technology can also be used to translate into other spoken languages for tourists or ethnic minorities.

Successes and Collaboration

TESSA has won both a gold medal and the overall IT Award at the British Computer Society's Information Technology Awards. In 2001, the system was on display at the Science Museum in London and was simultaneously on trial at the Post Office there and at other Post Offices throughout the country. The system has also received wide press and media coverage.

TESSA has been developed as a collaboration between UEA, Televirtual (the avatar), the UK Post Office and the RNID. It was part of the EU-funded ViSiCAST project, aimed at benefiting deaf citizens by giving them access to information and services in sign language.

References: For further information and papers see http://www.visicast.cmp.uea.ac.uk/Public.html.

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