Live speech-translation technology unveiled

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Technology that provides live translation of speech from one language to another has been revealed by scientists from the US and Europe.

This and other translation technologies were demonstrated publicly for the first time at Carnegie Mellon University in Pittsburgh, US, last Thursday. They were developed by researchers from the International Center for Advanced Communication Technologies (InterACT), a collaboration between Carnegie Mellon and the University of Karlsruhe in Germany.

Alex Waibel, a professor at both universities, demonstrated the system that almost instantly translates speech from one language to another by giving a talk in English that was converted simultaneously into German and Spanish. "We want everyone working together but to maintain our individuality," Waibel told reporters.

The researchers also revealed a directional speaker system that delivers a translated audio feed to just one person in a room, removing the need for them to wear headphones. And another concept device projected translated subtitles along the bottom of one lens of a modified pair of glasses.

Silent speech

One of Waibel's doctoral students, Stan Jou, revealed an even more futuristic idea. By attaching 11 electrodes to a subject's face and throat, a computer was able to generate speech from mouthed gestures alone. The researchers suggest the system might be used to place cellphone calls in situations where they are normally banned. The US Defense Advanced Research Projects Agency (DARPA) is looking at a related system.

The speech translation software developed by the InterACT researchers backs up its use of speech recognition and voice synthesis with statistical techniques to speed up the selection of words and phrases. These techniques are based on scans of a vast number of previously translated documents in order to build probabilistic rules for translation.

Other research groups and companies are also focusing on a statistical approach to translation. In August 2005, internet giant Google won a machine translation competition organised by the US government. One reason for Google's success is the vast quantity of translated information that it has collated for analysis.

In the past, translation researchers have sought to provide computers with an understanding of the syntactic rules underlying different languages. But this has often failed when faced with exceptions to those rules.

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