

Signing Matters

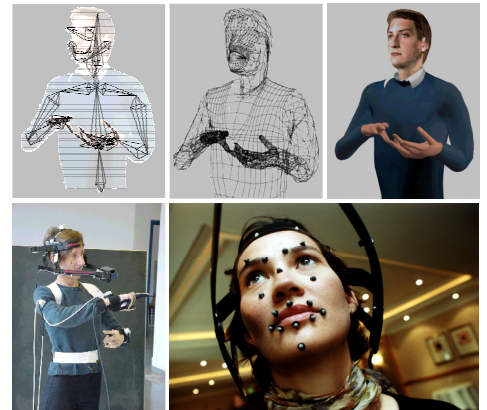
1 in 1000 people become deaf before they have acquired speech and may always have a low reading age for written English. Sign is their natural language. British Sign Language (BSL) has its own grammar and linguistic structure that is not based on English which has a phonetic basis. For educational purposes, use is made of Sign Supported English (SSE), a simplified language that lacks the richness of a true natural language.

Since deaf people do not necessarily find information easy to absorb in text, their access to services is restricted, despite the requirements of recent legislation. There is little support for digital services in sign.

The Academic Challenge of Signing

Signing presents an important and beneficial academic challenge as it provides a purely visual communications channel. Signing also exploits multiple modalities since gestures combine facial expressions with bodily and manual configuration and motion.

Research at UEA addresses the linguistics of sign language, where little is documented about grammar and semantics. We are also exploring the generation of signing by developing notations for gesture, and using them to synthesise faithful animations of sign from notation. Further, there is work on capture of human motion via video and use of motion sensors, leading to attempts to recognise signs from motion data.



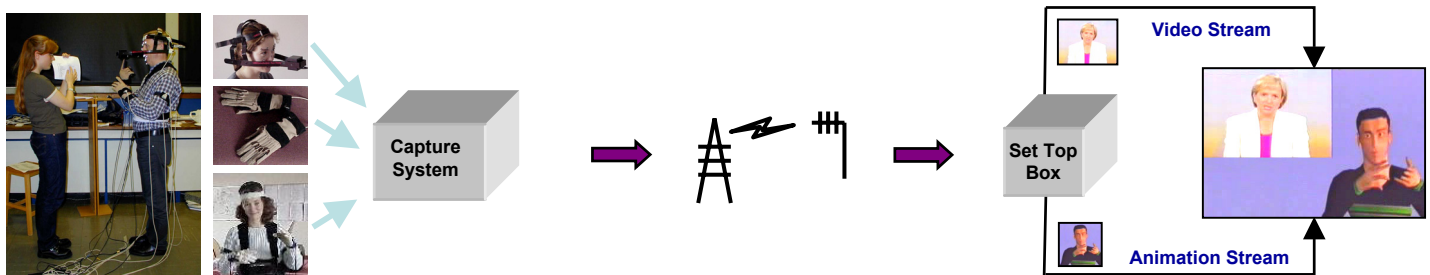
Using Virtual Human Avatars

Much of the work is based on animation of Virtual Humans, or Avatars. This work is partly in collaboration with Televirtual Ltd, a local television and multimedia company. Avatars bring the benefit of a relatively compact representation of gestures. Since avatars exist as 3-D models, they support choice of the appearance, viewpoint, and size of the character. Techniques enable signing sequences captured from different sources to be blended seamlessly. Video provides high realism, but editing and blending of sequences is impractical.

Recent projects at UEA include Simon the Signer, winner of two Royal Television Society Awards, and TESSA, winner of the BCS Gold Medal and top IT Award, undertaken within the EU ViSiCAST project.

Broadcast: Transmitting Avatar Signing

Research with the BBC, funded by the DTI, is developing robust techniques for capturing the facial and manual gestures of a live sign language interpreter. The motion data provides a low-bandwidth data stream that can be transmitted and used in the set top box to animate the “bones” of a 3-D signing avatar. The avatar character itself, and its position, size, pose, and lighting can be placed under user control.



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