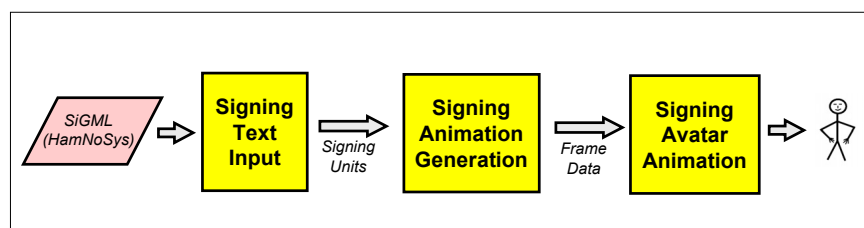


SiGML, Signing Gesture Mark-up Language, is the notation developed at UEA over the past three years to support the work of the EU-funded ViSiCAST and eSIGN projects. These projects are both concerned with the use of virtual humans to communicate with deaf people in their preferred medium, that is, in sign language. The SiGML notation allows sign language sequences to be defined in a form suitable for performance by a virtual human, or avatar, on a computer screen. *SiGMLSigning* is the software system we have developed to generate signing avatar animation from signing sequences defined in SiGML.

SiGML and HamNoSys

SiGML is a form of *Extensible Mark-up Language*, XML – a simple but flexible format for the exchange of structured and semi-structured data. XML is represented as plain text; hence it is easily transported over the Internet and World-Wide Web. The most important technical influence on the SiGML definition is *HamNoSys*, the Hamburg Notation System – a well-established transcription system for sign languages, developed by our partners at the Institute for German Sign Language and Deaf Communication at the University of Hamburg. Each sign language is an authentic language in its own right, with its own distinctive grammatical characteristics: a sign language is *not* an alternative form of some spoken language. Where sign language does differ from spoken language is at the phonetic level: sign language is articulated primarily by the hands, but also using other parts of the signer's anatomy, especially the head and face. The SiGML notation incorporates the HamNoSys phonetic model, and hence SiGML can represent signing expressed in *any* sign language.



SiGMLSigning

SiGMLSigning is a flexible software system that we have developed to provide synthetic animation of signing sequences defined in SiGML. SiGMLSigning implements the processing pipeline shown schematically above left. At the heart of this process is *Animgen*, the “synthetic animation engine”: this converts SiGML to a sequence of animation “frames”, to be displayed at 25fps, each corresponding to a configuration of the avatar's virtual skeleton. The SiGMLSigning architecture defines interfaces allowing any suitable avatar to be driven in this way. The eSIGN project uses the *VGuido-Mask2* avatar, developed by our partners at Televirtual Ltd. (above centre). To support our research into synthetic virtual human animation we have developed our own avatar animation system, the *Avatar Research Platform*, ARP, (above right).

References:

For further information about the eSign project: <http://www.visicast.cmp.uea.ac.uk/eSIGN/>.

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