# Scientific understanding and vision-based technological development for continuous sign language recognition and translation

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Description

The research project "SignSpeak" was a 3-year (2009-2012) STREP project funded by the EC's FP7 ICT program with the goal of developing an integrated automatic recognition and translation system which translates continuous sign language videos into the written text of a spoken language.
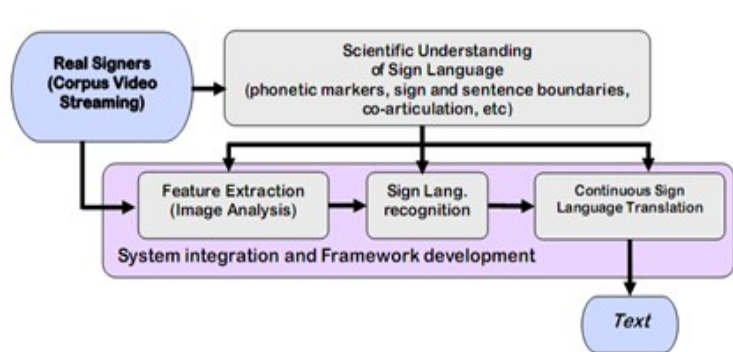
Sign languages are the primary means of communication for most deaf and many hard-of-hearing persons. As only few hearing persons know how to sign, it is a serious challenge for the deaf community to integrate into educational, work and social environments. An automatic system translating from a sign language into a spoken language would ease some of these communication problems. The SignSpeak project developed a prototype of such a system.

In the project, new annotated single-view video corpora for automatic sign language recognition and translation were created, taking linguistic knowledge (Radboud University Nijmegen, The Netherlands) as well as the requirements of computer vision (Technical University Innsbruck, Austria and CRIC, Barcelona, Spain), automatic sign recognition and translation (RWTH Aachen University, Germany) into account. Based on these corpora, new approaches for object tracking and feature extraction for sign languages were explored, and both the recognition and the translation framework were specifically tailored to the small-scale multimodal corpora at hand. The translation results of the whole SignSpeak pipeline were evaluated by deaf experts, guided by the European Union of the Deaf (Brussels, Belgium). Possible business products were assessed (Telefonica Research and Development, Spain), leading to a prototype video mail application. Altogether, the SignSpeak consortium succeeded in developing a prototype system to translate sign language videos into the text of a spoken language.