SignON workshop at the European Parliament
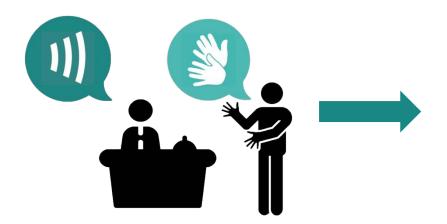
On 28ᵗʰ September 2022

Press Release

A deaf signer from Ireland is travelling to Spain for her work. She needs to check into her hotel, but she's in a hurry to get to a conference. The hotel clerk on duty only speaks Spanish. The deaf guest doesn't know Spanish, and doesn't have time to go back and forth writing in English. **This is an example of an acceptable use case in which an automatic translation application could be useful. The deaf signer can sign in Irish Sign Language, and the application gives an output of text in Spanish. Then the hotel clerk can speak in Spanish and the application provides a translation to Irish Sign Language via a sign language avatar.**

SignON is a 3-year project that has received Horizon 2020 funding of €5.6M and aims to develop a mobile application for automatic translation between signed and oral (written and spoken) languages. A year and a half has passed and, at the invitation of a non-Attached Member of the European Parliament, Ádám Kósa, the SignON project had the opportunity to organise a workshop in the European Parliament on the 28ᵗʰ of September 2022.

Ádám Kósa: *"I am certain that in 50 years technology will play an even greater role than we can imagine today. After all, the everyday lives of people with disabilities are already supported by many technologies that we could not even dream of 20 years ago. The role of technology and its impact on people's lives must be constantly researched in order to find the best solutions."*

In this workshop the SignON consortium of 17 European partners led by Prof. Andy Way, Professor of Computing at Dublin City University (Ireland), and Dr. Dimitar Shterionov, Assistant Professor in Cognitive Science and Artificial Intelligence at Tilburg University (The Netherlands), present the technological advances achieved in the project to date as well as the social benefit and impact on the deaf, hard of hearing and hearing stakeholders.

Dr. Dimitar Shterionov: *"A.I. has evolved immensely in the last decade and has reached unprecedented performance levels addressing an ever-growing set of topics. Exploiting the advances in sign language and speech recognition, automatic translation and synthesis of 3D virtual characters, SignON develops an all-in-one translation solution, accessible with the touch of a button."*

To generate speech from text the SignON application has employed the services of the Acapela Group who provide plenty of languages and voices. The most challenging task is to generate a sign language message with a 3D virtual signer or in other words, a sign language avatar. Two methods are adopted here: a symbolic AI possessing knowledge that is defined by experts and neural AI that require a lot of data. To build sophisticated deep learning models, tons of high-quality data is needed. The problem is that sign language data is very scarce and scattered.

In addition to this data challenge the SignON researchers and developers are looking for solutions to within the sign language communities, the European Union of the Deaf (EUD), as a member of the SignON consortium, stressed the necessity of the inclusion of deaf communities and collaboration between deaf and hearing professionals.

Mark Wheatley, Executive Director of EUD & **Frankie Picron**, project manager of EUD*: "Contrary to what many hearing researchers think, deaf people are not resistant to technology, but are put off because technologies are usually not designed in collaboration with them. Therefore, it is of utmost importance to include diverse user communities from the start."*

The unique thing about the SignON project is that there is a strong commitment to the co-creation principle: through collaboration with European deaf and hard of hearing communities, researchers will define use-cases, co-design and co-develop the SignON service and application. Through different co-creation events the SignON consortium already surveyed potential users from four different European countries as to what their needs and expectations are. There was some openness in the use of sign language technology amongst the participants, provided it is well developed and used in acceptable use cases. There are very high expectations for sign language avatars and translation quality which must be met before use will be deemed acceptable. In addition to this hope, there are also some fears expressed by the participants.

Davy Van Landuyt, a researcher of EUD, quoting a participant: *"I know avatars are not supposed to replace interpreters, but in the future the government might try to save money and go for avatars, even when this is not a good choice for the deaf community."*

Obviously deaf signers still prefer non-technological services such as real-time interpreting over automatic machine translation in critical use cases. In other words, where there are situations when miscommunication doesn't have serious consequences for the life of deaf people (e.g. court, hospital, emergencies, etc.), human interpreters are the preferred means of communication. Automatic machine translation is more acceptable for small daily conversations such as those in hospitality settings. However, Dr. Maartje De Meulder, a deaf scholar and currently senior researcher at the University of Applied Sciences Utrecht (The Netherlands), questions the two existing systems. She commented that both sign language interpreting and AI-powered language technology systems are never neutral and noted that discussion usually lags behind scientific innovation.

Maartje De Meulder: "In the development and applications of sign language technologies, we must always be mindful of issues of ethical and responsible development, and critically interrogate some of the ideologies behind those technologies."

According to Dr. Maartje De Meulder, it is important that we should consider several ethical questions as there may be a risk for bias in the training material for AI as there is already bias in data sets and in sign language interpreting as a system. Mostly there is interpreted data that is often signed by people who are not native signers (for example the news broadcasts that are interpreted by hearing interpreters). Sign language interpreters are already language models to which deaf people need to adapt. In other words, if the biased data is fed to AI, deaf people have to sign like (hearing) interpreters to be understood by language technology? Who] will then benefit from AI and its applications? Who will decide the application domains? It will also impact on the language rights of deaf users: if they do not sign like an non-native signer, does that mean that they can't use this technology?

Caro Brosens, a linguistic researcher of the Flemish Sign Language Center, shares Maartje De Meulder's concerns. Not only is there not enough high quality data, but it is also not always available. And while there is big variation in sign proficiency within sign language users, care needs to be taken when labelling this feed data for AI.

Caro Brosens: *"SignON is striving to ease the valid concerns and needs on both sides of the sign language data debate, navigating the undeniable added value of high quality data on the one hand, and the inevitable need for big quantities of data on the other."*

The demand for more high quality sign language data is clearly expressed by the SignON consortium at the European Parliament. Jorn Rijckaert, the communication and dissemination coordinator of the SignON project, also emphasises to the policymakers that an automatic machine translation application will not meet all of the language and cultural needs of deaf signers. There is often a misconception that deaf signers are only monolingual in the sense that they only know one sign language. In reality, they know several oral languages (in spoken or written form) and possibly more than one sign language. In a conversation with hearing people, they are more likely to make use of

shared language skills and the available modalities like text form via smartphones, pointing or use (co-speech) gestures, etc.

Jorn Rijckaert: *"In our communication we always make clear that SignON doesn't mean any threat to the use of physical sign language interpreters, but it will contribute to a repertoire of communication options and modalities between signers and non-signers."*

While many topics were discussed at this workshop, including some beyond the current scope of SignON such as (bilingual) education for deaf children, increase in news broadcasts by native deaf signers, the need for more research on signed languages and deaf studies, etc., one message was clear: despite the advances that SignON could bring, people themselves should make the choice of the right and preferred form of communication and not be forced to use applications.

For further information, please contact the SignOn consortium on signon-comms@adaptcentre.ie.

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