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BabelDr: a medical speech to sign translation tool

David, Bastien; Bouillon, Pierrette; Gerlach, Johanna; Mutal, Jonathan David; Strasly, Irene; Spechbach, Hervé

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Background :

- 52% of patients at the Geneva University Hospitals (HUG) are foreigners
- 12% don't speak French at all

⇒ Without interpreters, how can we communicate and ensure accessibility and quality of care?

Through a web interface, BabelDr gives the doctor oral access to tens of thousands of pre-translated sentences.

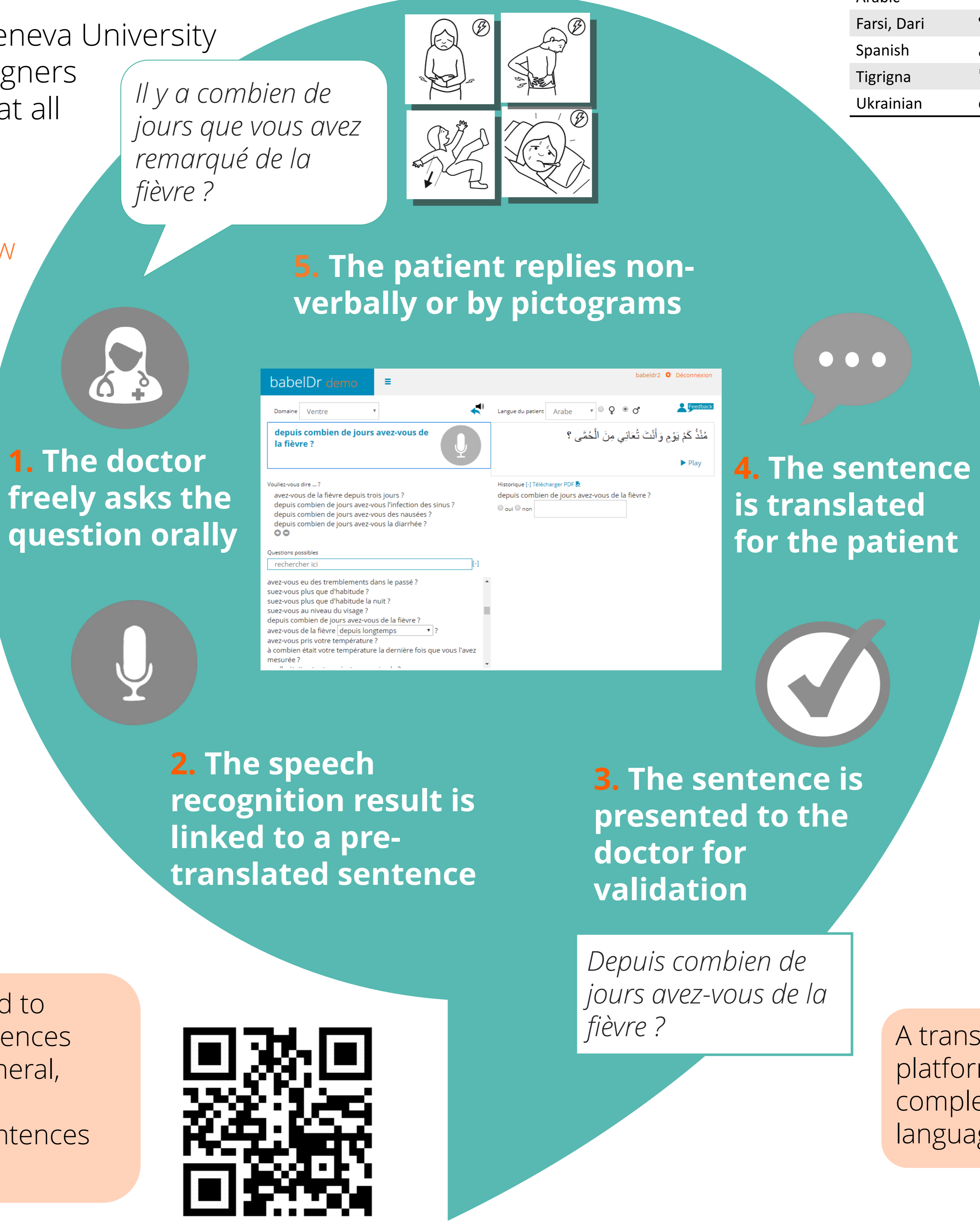
Reliability of translation

Voice recognition is performed locally on a secure server at the HUG.

Data security

- One billion variations linked to 10'000 pre-translated sentences
- 11 domains: reception, general, head, chest, follow-up etc.
- Based on thousands of sentences recorded by HUG doctors

Adequacy to needs



Language	Translation
Albanian	që prej sa ditësh keni temperatur?
Arabic	منذ كم يوم وأنت تعاني من الحمى ؟
Farsi, Dari	چند روز است که تب دارید؟
Spanish	¿Cuántos días lleva con fiebre?
Tigrigna	ክንደዬ ምዓልተ ኮይኑ ኣሎ ረስኒ ካብተገብረልኩ?
Ukrainian	скільки днів у вас температура?



The sentence is translated for the patient

Written and spoken translation / video for sign language

- Albanian
- Arabic
- Dari
- Spanish
- Farsi
- LSF-SR
- Tigrinya
- Ukrainian

Adequacy to needs

A translation management platform makes it easy to complete content and add new languages.

Extensibility

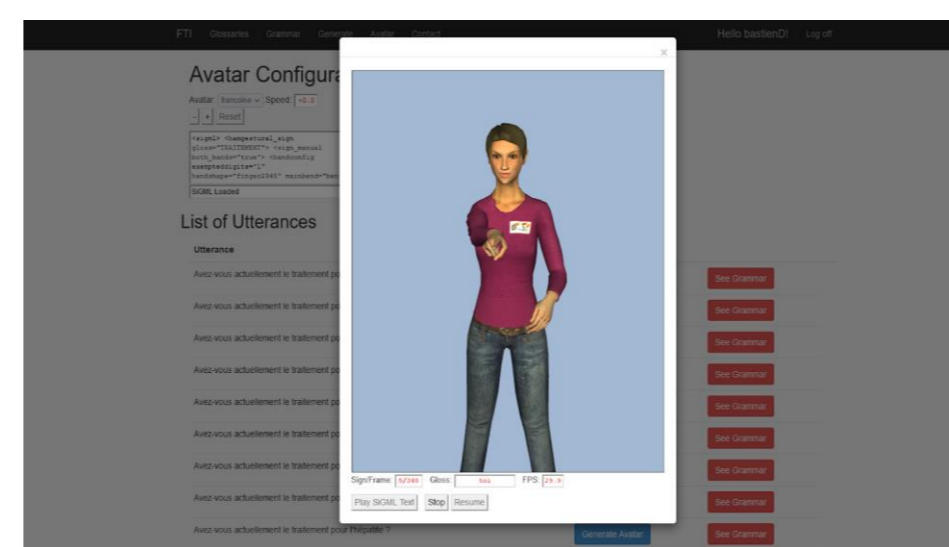


Deafness and Switzerland

Population : 1 Moi swiss Deaf people

Linguistic minority : There are three Sign Languages used in Switzerland (DSGS, LSF-SR, LIS). 20'000 people use it

Law : LHand Federal Act (12.2002) ; Lohr Federal Act (06.2017)



Porting BabelDr to sign language

Method 1 : Videos recorded by a deaf nurse and deaf sign language experts

Method 2 : Development platform SigLa and Avatar Generation

Results

Method 1 : 2'000 sentences
 Method 2 : 1'670'000 sentences

A parallel video corpus available on the institutional repository Yareta [10.26037/yareta:aldcuemybbjcpnzqwn74knf24](https://doi.org/10.26037/yareta:aldcuemybbjcpnzqwn74knf24)

Future works

Portability to other sign languages (currently, Ukrainian Sign Language), to other medical domains.

Survey

Online survey comparing the understanding of the two sentences versions.

	Correct Answers with Human			Correct Answers with Avatar		
	Main results	Other	Relative value (%)	Main results	Other	Relative value (%)
Qu.1	14	3	89,47	8	1	47,36
Qu.2	14	0	73,68	18	1	100
Qu.3	19	0	100	16	0	84,21
Qu.4	17	0	89,47	16	0	84,21
Qu.5	19	0	100	17	0	89,47
Qu.6	19	0	100	17	1	94,73
Qu.7	17	0	89,47	15	0	78,94
Qu.8	19	0	100	14	0	73,68
Moy.			92,76			81,58

