

Development of a Speech Translator for Medical Use : A Joint Project Between Geneva University Hospitals and the Faculty of Translation and Interpreting of Geneva University

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⚠ In a medical setting, language barriers can be life-threatening ⚠

1. Goals

Problem

- 52% of all patients at HUG are foreign
 - 12% speak no French
- Standard solution: employ human interpreters
 - Scarce and expensive
- Google Translate not sufficiently reliable

Solution

The **BabelDr** web platform supports translation of spoken clinical dialogues for specific medical situations

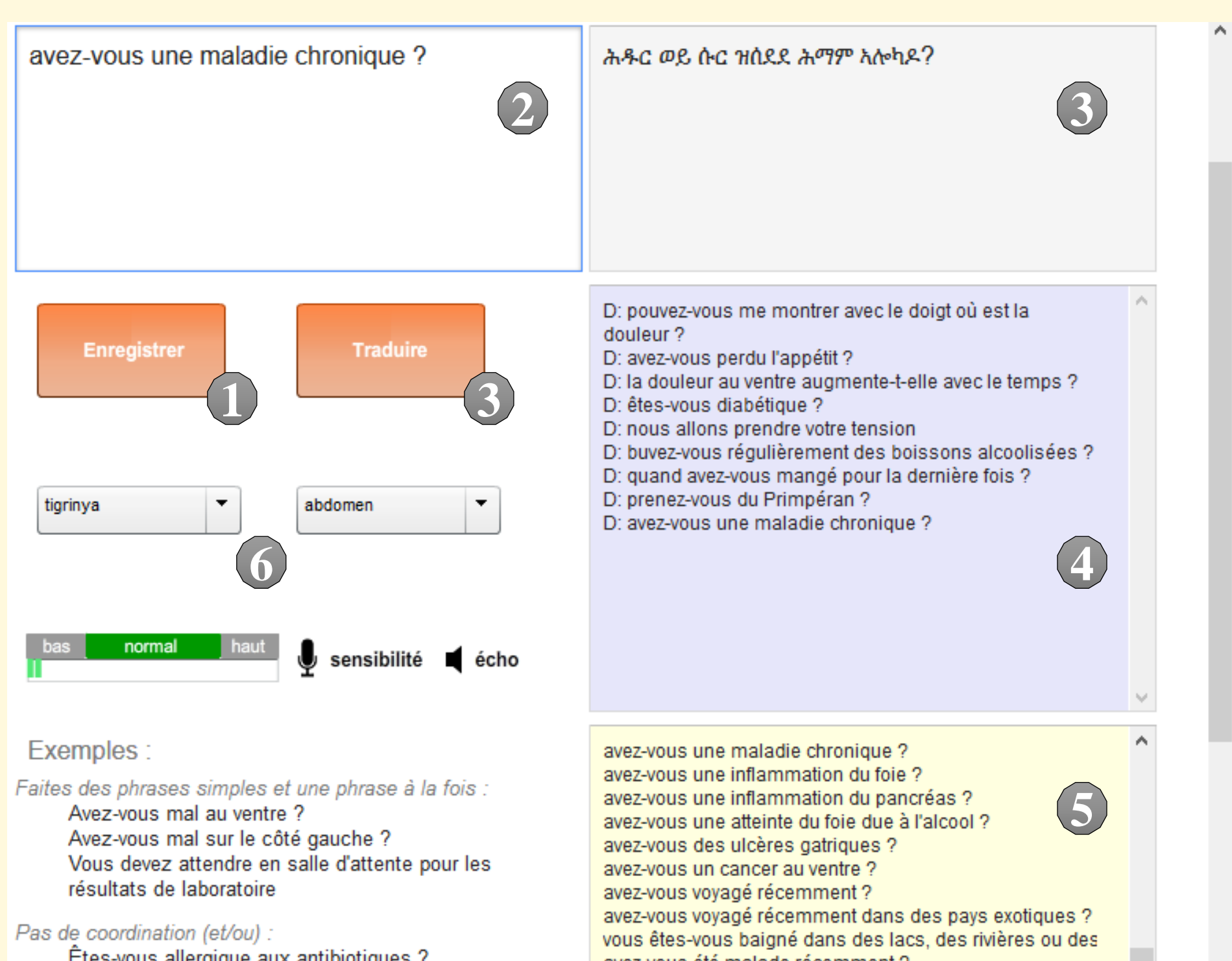
3. Results

Web platform

System directly accessible over the web (no installation required)

The user can:

- Speak to system,
- Examine the result,
- Translate it to the target language
- See the history of the questions,
- Learn the system's coverage and
- Change the target language and domain

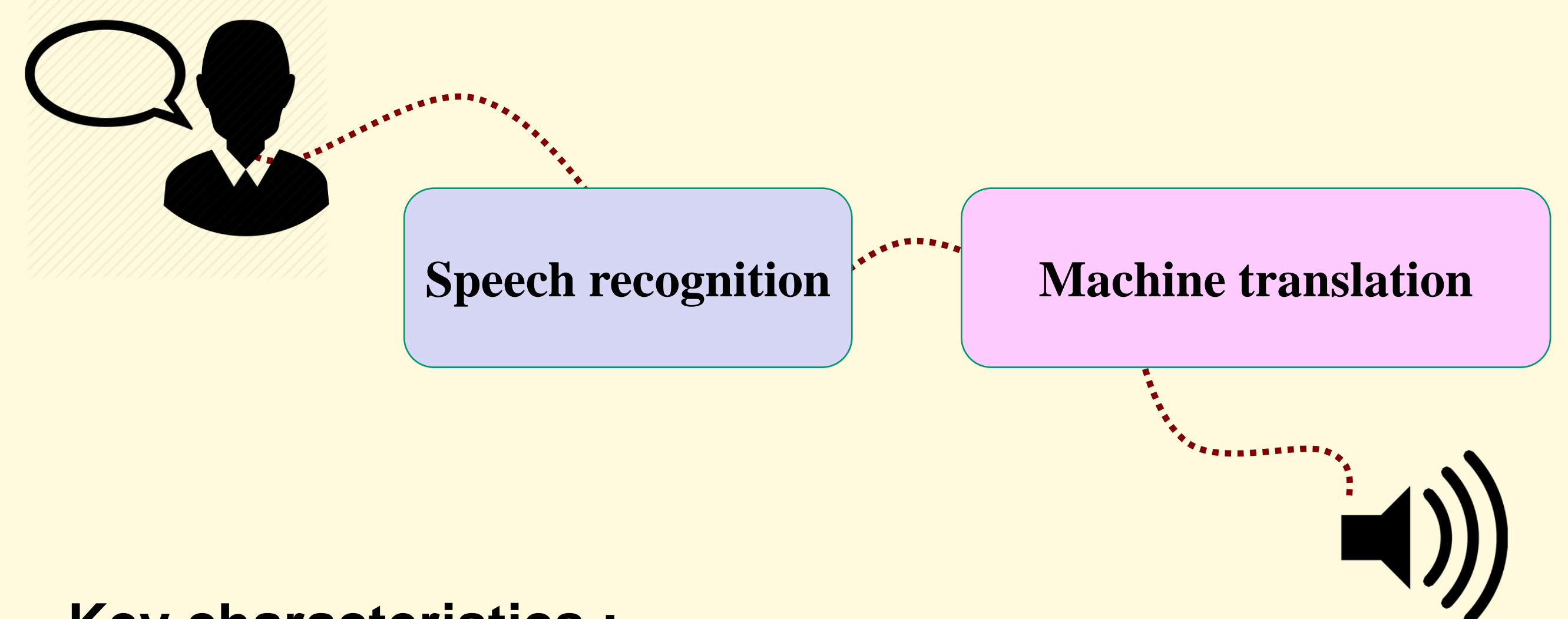


Preliminary evaluation

- Focus: Clinical Communication about Abdominal Pain
- Translation into Spanish, Arabic and Tigrinya.
- 413 questions and instructions.
- 7 million different phrases with a vocabulary of about 1400 words.
- Evaluation of performance based on semantic recognition accuracy.
- 73% of the results judged by two judges as very good or adequate (Cohen kappa:0.84).

2. Methodology

Speech-to-Speech processing



Key characteristics :

- Limited but highly reliable coverage
- Content determined by HUG's healthcare professionals
- Domains: abdominal pain, chest pain, headaches
- Target languages: Arabic, Italian, Spanish, Tigrinya

Distinctive features

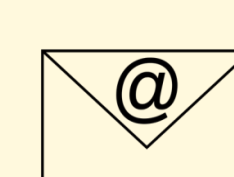
BabelDr is different from Google Translate:

- Echoes back system's understanding of question
 - User: "Where is the pain?"
 - System: "Can you point with the finger where you feel the pain?"
- Translation based on human translation expertise
 - Output guaranteed correct if recognition is correct
- Easy to add new languages, and distant pairs
 - French to Tigrinya

4. Conclusions

The goal of BabelDr is to develop methods that allow rapid prototyping of medium-vocabulary web-enabled medical speech translators, with particular emphasis on languages spoken by victims of the current European refugee crisis. Other target languages to be added soon include Farsi, Russian and Albanian.

For more information refer to the project's web site:
<http://babeldr.unige.ch>



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