



WIPO speech-to-text: automatic generation of meeting verbatim

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Summary of WIPO AI-based Tools and Applications

AI="Deep supervised machine learning"

■ Text processing:

- WIPO Translate (Neural Machine Translation)
- Classification & Transliteration*
- Chatbots*

■ Image similarity processing:

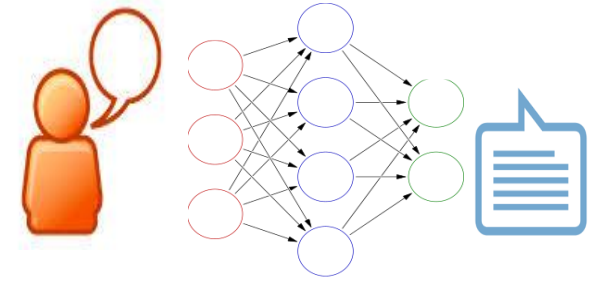
- Image classification (logos)
- [Image-based search](#)

■ Speech processing:

- Speech to text
- Search in video-audio
- Speech to translated text*

Disclaimer: Any machine translation or speech processing tool, including WIPO's, is NOT designed to replace the need for human intervention – It is just a "tool", to aid humans in making their intervention more effective and efficient

WIPO Speech-to-text



- An example of machine learning in house development based on WIPO conferences (+ other institutions)
- E.g. two pilot WIPO conferences are indexed at <http://www.wipo.int/s2t>

WIPO Speech-to-Text

Search WIPO meeting transcripts

Search WIPO meeting transcripts

English

ALL

Latest Speech-to-Text transcripts



Automatic transcription of the SCP31 session that took place on 02.12.2019 (morning)

Mon, 02 Dec 2019 14:01:12 CET

[Live demo](#)

Speech-to-text: WIPO conference example

■ Text is aligned with the video



Set playback speed: 2x 1.5x 1x

in the pre-grant and post-grant review, effective barriers and prevent
patent-based incentives and necessity

With the drilling force for triggering drug research and development
developing countries.

The TRIPS Agreement provides these countries with policy space.

■ Search example:

WIPO Speech-to-Text search

trips English SCP31
Search WIPO meeting transcripts

Search results

Text snippet result	Conference	Date	Media timestamp
The TRIPS Agreement provides these countries with policy space.	SCP31	2019-12-02	56 minutes, 20 seconds
In spite of different national laws the flexibilities enshrined in the TRIPS Agreement.	SCP31	2019-12-02	2 hours, 16 minutes, 23 seconds
And especially LDCs on the understanding and use of flexibilities contained in the TRIPS Agreement.	SCP31	2019-12-02	2 hours, 31 minutes, 44 seconds
The effective use of compulsory licensing within TRIPS flexibilities has.	SCP31	2019-12-02	2 hours, 42 minutes, 57 seconds
TRIPS flexibilities.	SCP31	2019-12-02	2 hours, 31 minutes, 59 seconds
Of the TRIPS Agreement which is already in force in Brazil and this will be until Thirty first December	SCP31	2019-12-02	2 hours, 38 minutes, 7 seconds
And the mechanisms and the use of the flexible possibilities of the patent system are set out in TRIPS	SCP31	2019-12-02	23 minutes, 33 seconds
The major international patent instruments including the Paris Convention and the third TRIPS Agreement	SCP31	2019-12-02	2 hours, 30 minutes, 28 seconds
We find that this particular exception should be used within the rules provided in the TRIPS Agreement	SCP31	2019-12-02	2 hours, 37 minutes, 36 seconds
The significance of TRIPS flexibilities in the design of domestic patent laws is critical and provides	SCP31	2019-12-02	54 minutes, 47 seconds

https://www.wipo.int/s2t/search.html?conf_id=SCP31&language=en&search

https://www.wipo.int/s2t/SCP31/SCP_31_2019-12-02_AM_1_mp4.html?start_time=3380.97

Live presentation

- Live demo on WIPO public interface:

<http://www.wipo.int/s2t>

- An example of English transcript:

https://www.wipo.int/s2t/CDIP24/CDIP_24_2019-11-21_PM_1_mp4.html?start_time=1964.88

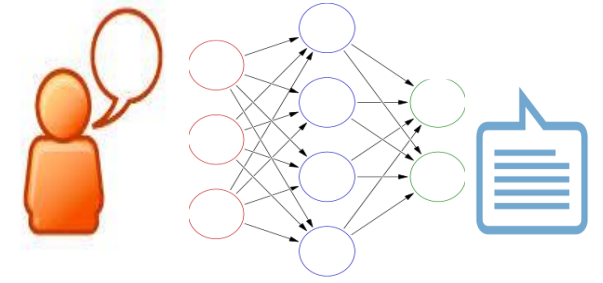
- An example of Spanish translation:

https://www.wipo.int/s2t/CDIP24/CDIP_24_2019-11-22_PM_1_mp4_tr_es.html

- An example of search:

https://www.wipo.int/s2t/search.html?conf_id=CDIP24&search_query=education

WIPO S2T: Summary



- WIPO's own AI tool: in-house development based on open source;
 - We can share our tool;
 - We can install and run it on our own premises (and also process confidential meetings).
- Trained specifically on conference speeches;
- Robust: launched during two weeks of WIPO conferences;
 - An innovative way to improve rapid access to meeting information;
 - Transcripts in English only (other UN languages to be explored);
 - Transcripts + WIPO Translate (for French, Spanish, Russian, Chinese and Arabic), quality to be properly evaluated;

Features of WIPO S2T

■ Pros

- Fast
- At par accuracy with other machine learning commercial S2T service providers
- Cloud or on premise deployment
- Performs well on speech with diverse accents
- Speaker independent

■ Cons

- Currently, WIPO S2T only supports English
- For now, WIPO S2T does not support real-time processing (for live captioning)
- Far from publishable quality

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S2T: Latest Developments

- Domain adaptation
- New User Interface
- Multilingual search
- Edit Interface

S2T: What next?

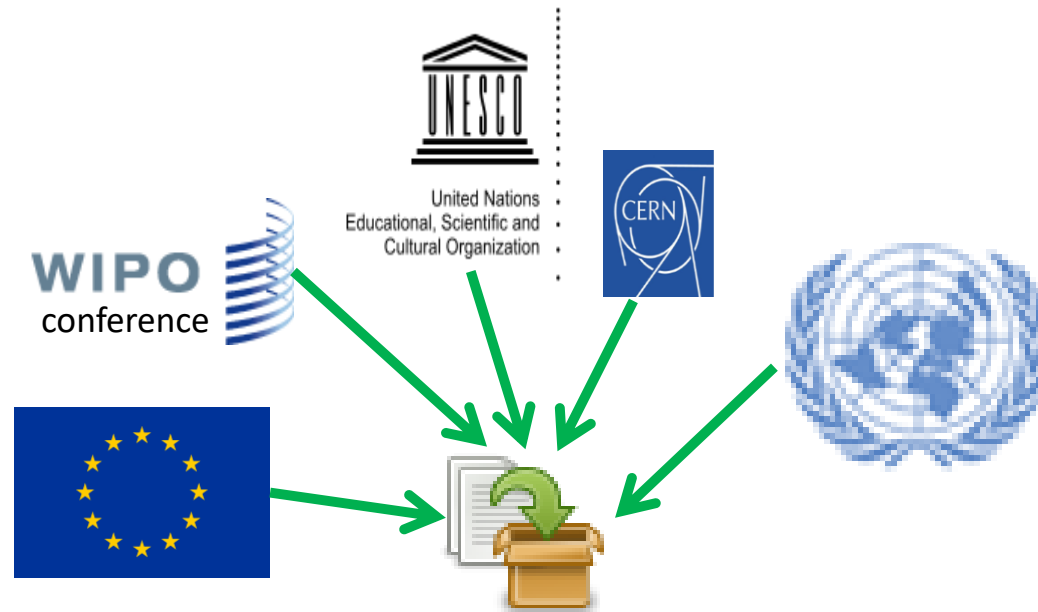
- Real time captioning
- Speaker time stamping
- Continue improving speech recognition for EN
- Improve domain adaptation
- Improve automatic translation
- Support other languages (French, Spanish, then Chinese, Russian & Arabic)

S2T: use cases

- Quick meeting records delivery
- Search
- Archived knowledge discovery
- Improving accessibility (closed captioning)
- ... and more to come

Speech: mixing data from various sources...

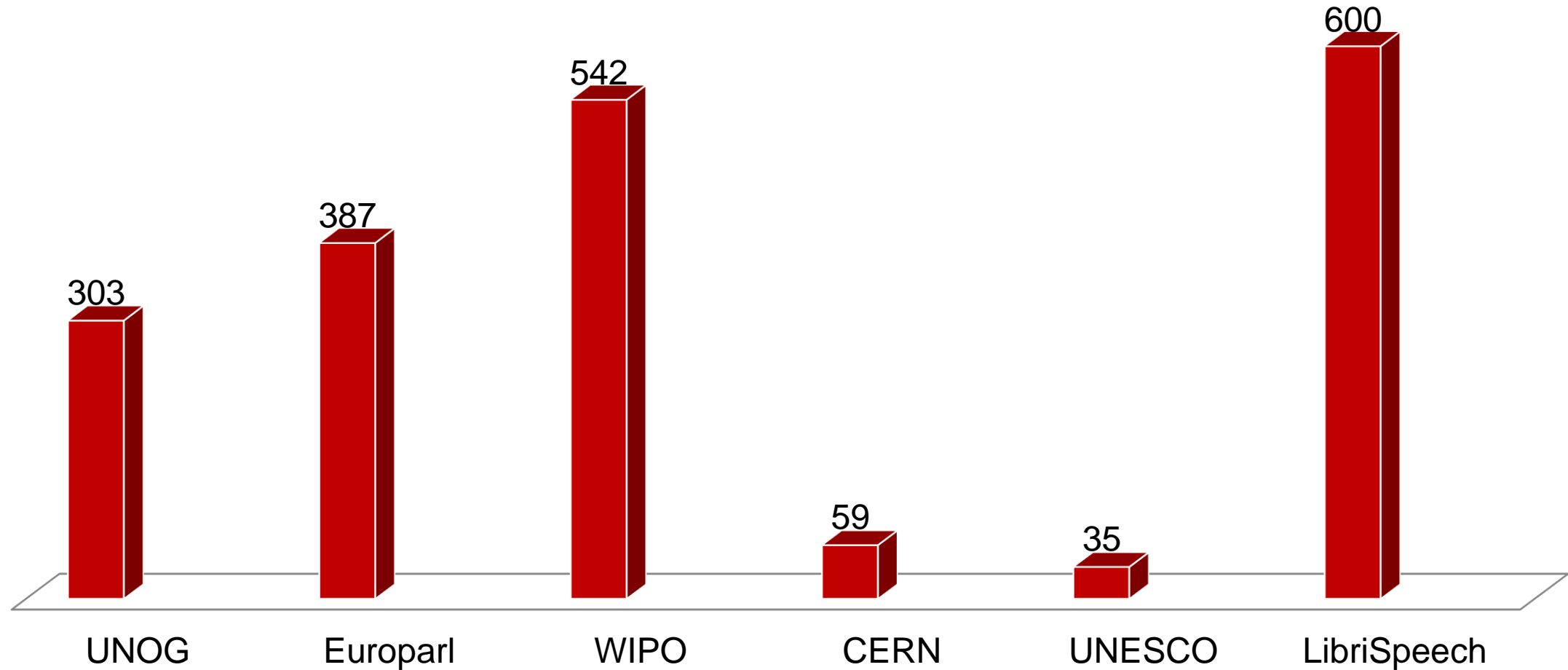
- WIPO conferences
- European Parliament
- UN
- UNESCO
- CERN
- ILO...



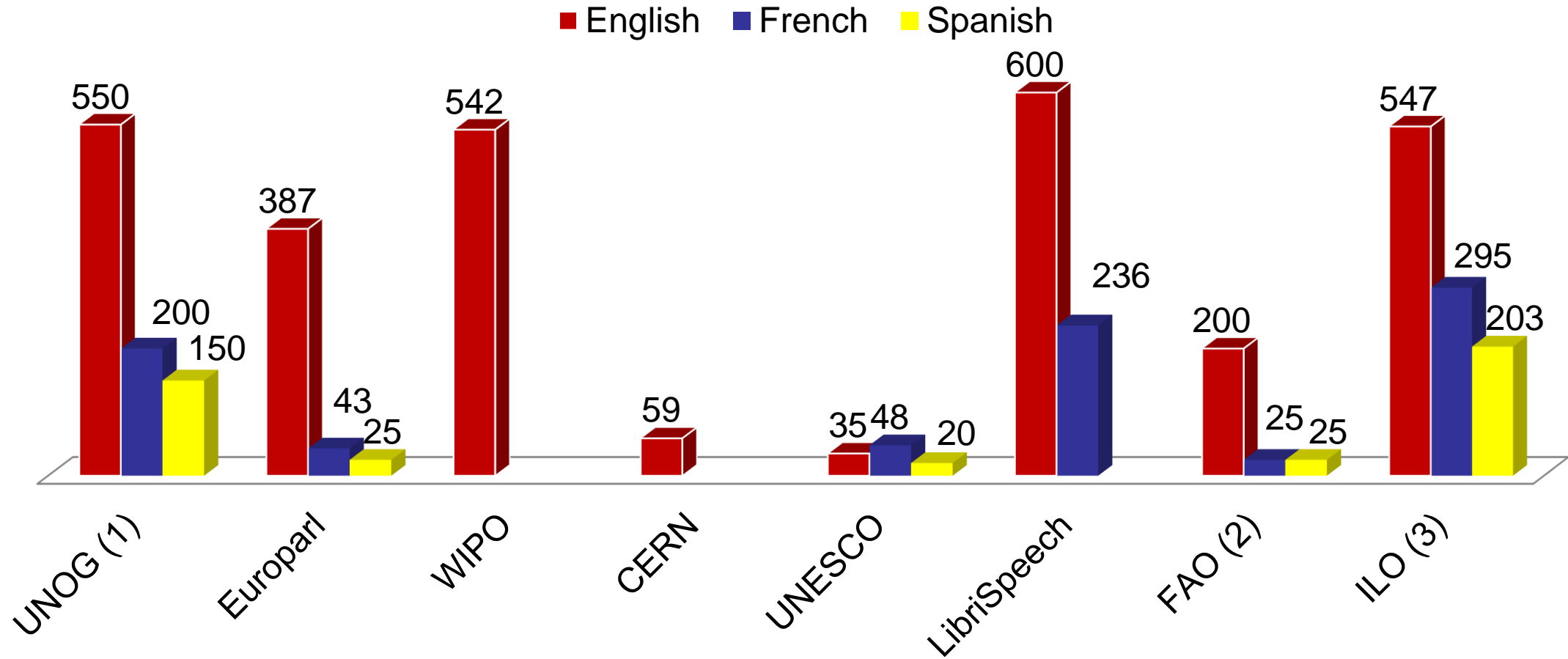
- Agreement signed with UNESCO, UNOG, CERN, WTO, ILO,
- Interest: ECB...



Current training data



Incoming training data



(1) Unog English data to increase by ~ 150 h

(2) FAO data not properly aligned (pdf conversion needed)

(3) ILO not processed

Collaboration

- WIPO's interest
 - Collect training data
 - State-of-the-art S2T in all official UN languages
- Your interest
 - Free and open source S2T
 - Possibility of a support contract

Win Win!

Expanding our AI footprint to assist other organizations

- WIPO's advances and innovations in AI are valuable externally
 - Intellectual Property industry, and Science and Tech community;
 - Member states and national/regional Intellectual Property Offices;
 - UN-family organizations, and other international institutions.
- WIPO is mindful of the growing global digital divide and thus committed to providing inclusive access to WIPO AI tools
- Currently following a demand-driven approach in licensing our AI tools