Utilizing Automated (Simultaneous) Translation for Internationalisation at German Universities

With the Lecture Translator (LT), the Karlsruhe Institute of Technology (KIT) is embracing the trend of speech recognition and translation within the tertiary education sector to improve internationalisation.

**Setting**
In accordance with its umbrella strategy 2025, KIT primarily offers German-language Bachelor’s and Master’s degree programs at the Bachelor’s and Master’s level, in which English-language courses are integrated. The aim is to provide targeted support for international students and to attract talented young people to Germany.

According to data from the HWR Compass, 40% of all study programs in Germany are offered in German. Human interpreters are too expensive for universities. A large-scale conversion of the degree programs to the English language is currently not to be expected, would discriminate against German citizens, does not meet with general acceptance and requires additional qualification of the lecturers.

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**Implementation Challenges**

- Specialised vocabulary: technical terms normally not in the standard vocabulary,
- Language peculiarities like different word order, composita, inflections and
- Signal variations: accent, dialect, voice, noise, microphone, room
- Homonyms in translation:
- Homophones in speech recognition:

Speech Translation is Difficult

- Following synthesized speech is tiresome and disturbs following the original
- Text instead of Speech Synthesis can be easily distributed through the WWW
- Typical applications are simultaneous lecture translation, videos, meetings,
- Needs to present translation result in an appropriate manner with low delay.
- Combines automatic speech recognition (ASR) and machine translation (MT).

**Spoken Language Translation**

- It is based on the research of the Interactive Systems Lab at KIT. The Lecture
- The system has been set up and continuously optimized since 2012 and is
- The system offers the possibility of using a transcription of the lecture with
- The system operates via the KIT Lecture Translator at KIT and is used to provide access to German-language courses for international students.

**State of the Art**

- Services in the context of automated speech recognition and machine
- The Lecture Translator fulfills the specific requirements in the context of a
- The focus is on improving internationalisation.
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**Innovation Process**

The goal is to transform the KIT experiences and knowledge into a regular operation in the German university landscape.

The continuous optimization process is closely tied to the endeavor to use the Lecture Translator more and more in lectures and seminars. The aim is to develop a guideline for the introduction at universities as well as an operating and billing model for service providers. This is intended to open up this IT infrastructure for machine speech recognition and translation to the entire university landscape in Germany. Furthermore, continuous research and work is needed. The latest trend in Spoken Language Translation (SLT) is to use sequence-to-sequence components, or to even go directly from the source language audio to the target language text – all with the aim to improve performance and to reduce the error rate.

- Although more language directions must be trained and integrated, e.g., to
- Feedback from other universities points to provide it as a software-as-a-service (SaaS) by a KIT spin-off company (Kites). With this, the system can be maintained as a market-ready product.
- By establishing a Germany-wide service via the appropriate institutions, sufficient
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