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## New Automatic Translator Could End Language Barrier in Lectures

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Understanding lectures can be a challenge for foreign students, since they may not be fluent in the language used in the classroom. But Alex Waibel, a computer-science professor at Karlsruhe Institute of Technology, one of Germany's leading universities, has helped develop a computer program that could eliminate the problem.

The professor has helped build a simultaneous-translation [computer program](#) that allows students to use a laptop to gain access to real-time translations of lectures as well as any slides or presentations that a professor might use. Students can see both the original transcript of the lecture as well as the translation. Moving the mouse over the original text produces a pop-up window with the translation.

The service has been used at the university on a trial basis since April.

No special preparation is needed. The instructor clips on a microphone and proceeds as in any other classroom setting. Mr. Waibel says it is helpful if the lecturer scans through the translator any PowerPoint presentations or other teaching aids in advance, in the same way that human translators typically request such materials, because academic lectures often employ specialized terminology or technical phrases.

Mr. Waibel has been working on speech synthesis since he was an undergraduate at the Massachusetts Institute of Technology. The automatic translator builds on more than 20 years of research conducted by Mr. Waibel and his colleagues, including researchers at Carnegie Mellon University, where he is also a professor.

The program integrates several difficult technologies. Speech recognition is fraught with problems, he says, such as recognizing variations in accent.

Translation, too, is problematic, since accuracy depends on context and dealing with the peculiarities of each language.

Germany and Australia rank third, after the United States and Britain, in the number of foreign students they enroll. Many German universities offer a growing number of courses and degree programs in English, but foreign students at Karlsruhe, who represent 16 percent of the total, must learn German, which remains the language of instruction. “Students are only admitted if they have passed a German-proficiency test, but they still say it takes one or two years to be good enough to follow lectures, and language remains a continuing problem for them,” says Mr. Waibel.

Karlsruhe’s use of German “scares off a lot of good students” and hinders efforts to bring in more international students, he says.

The translation system could be an essential tool in making Karlsruhe and other German universities more attractive to international students, perhaps even allowing them to eventually abandon language requirements if it proves reliable enough.

Many students, in Germany and elsewhere, are also interested in translating from English into their own languages, especially Chinese, Mr. Waibel adds. “There’s tremendous potential for this,” both in classrooms and more generally, he says.

Even students who feel comfortable in the language in which a lecture is being delivered have said they find the automatic translator useful. Some have said they find that having a transcript in German helps improve their German and allows them to better follow a lecture, even if they don’t use the translation component.

The program is far from perfect, Mr. Waibel concedes. “It’s clearly making mistakes, and sometimes the output is awkward, but that’s not the point. If you imagine being in a lecture and understanding nothing, then a little awkwardness is worth it.”

As for the perennial question about whether technologies such as this can do better than humans and will eventually replace human translators, he says that misses the point. “We’re not trying to replace human language learning,” he says. “We’re not competing with humans. We’re competing with nothing.”

[[Photo of students using simultaneous translation system](#) by Sandra Göttsheim]



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