A CAPT tool for training and research on lexical stress errors in German

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Abstract

This demonstration presents a prototype tool for Computer-Assisted Pronunciation Training (CAPT) in German.
Index Terms: speech recognition, human-computer interaction, computational paralinguistics

This demonstration presents **de-stress**[1]: the German (**de**) **S**ystem for **T**raining and **R**esearch on **E**rrors in **S**econd-language **S**tress.

This prototype CAPT tool provides a variety of options for diagnosis of and feedback on lexical stress errors, and could potentially be a useful component of an intelligent CAPT system.

Via a simple web interface, the system presents a student with a German sentence, with one of the words highlighted as the target word for that exercise. The student is prompted to submit an utterance of that sentence for assessment and feedback, with the instruction to focus on the accurate expression of the lexical stress pattern of the target word. The student's utterance is subsequently analyzed for lexical stress errors using a variety of diagnostic approaches (see **??**), and finally the student is presented with one or more types of feedback on their realization of lexical stress in the analyzed utterance (see **??**). Figure 1 presents a screenshot of the interface presenting such feedback.

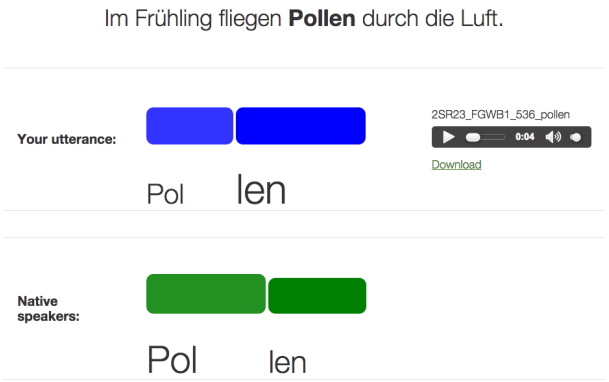

Figure 1: Example of feedback delivery in de-stress

In addition to this student-facing interface, an administrative interface allows a language teacher or a researcher of L2 language acquisition to create new exercises for students to complete, where each exercise features a specific combination of the various diagnostic methods and feedback types available in the system. By allowing fine-grained control over these features, de-stress enables researchers to create CAPT exercises with different features for the purposes of in vivo studies of the effectiveness of different feedback types, and allows teachers to create exercises matching the needs of their students.

[1] github.com/vakila/de-stress

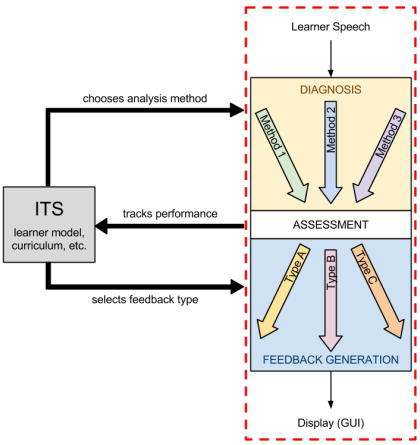

Figure 2: Conceptual diagram of the prototype lexical stress CAPT tool (demarcated by dashed line) and its possible function in the context of a more comprehensive Intelligent Tutoring System (ITS).

Both instructional and research applications have thus motivated the development of de-stress. Unlike with some existing tools for diagnosis and feedback on pronunciation errors, learners can interact with the tool and interpret its feedback independently, i.e. without the assistance of a human instructor at their side. At the same time, researchers can use this modular system to study the impact of various assessment and feedback types on learner outcomes, user engagement, and other factors impacting the success of a CAPT system. Once more is known about which diagnosis/feedback types should be delivered to which learners in which situations, this tool could become a useful component of a fully-fledged intelligent CAPT system, in which models of relevant aspects of the learning context (e.g. the student's skill level, progress, or personal preferences; the current learning objective or position in a sequence of exercises; etc.) are used to automatically decide which modules of the tool to activate, as fig. 2 illustrates.

[TODO]

1. References