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

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## Abstract

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

## 1. A training tool for German learners

Via a simple web interface, de-stress presents a learner with a German sentence, with one of the words highlighted as the target word for that exercise. The learner 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 prosody (duration, fundamental frequency, and intensity) of the learner's utterance is then analyzed using the speech processing software JSnoori [2]. Based on this analysis, lexical stress errors are diagnosed via either classification-based error detection using machine learning [3], or comparison of the learner's utterance with one or more reference utterances by native speakers. In the comparative approach, references may be selected manually, or by automatically selecting the closest match(es) to the learner's voice (fundamental frequency).

Based on this error diagnosis, the learner is presented with one or more types of feedback on their realization of lexical stress, with options including visual feedback via abstract graphical visualizations and/or text stylization (see fig. 1), auditory feedback via prosodic modification of the learner's utterance, verbal error/success messages, and graphical "skill bars" corresponding to each of the prosodic parameters analyzed. Learners may also be asked to self-assess their utterance before viewing the system's diagnosis and feedback.

## 2. A tool for teachers and researchers

In addition to the learner-facing interface, the administrative interface of de-stress allows language teachers or researchers of L2 language acquisition to create new exercises for learners to complete, where each exercise features a specific combination of the various diagnostic methods and feedback types available in the system (see fig. 2). By allowing fine-grained control over these features, de-stress allows teachers to create exercises matching the specific needs of their students, and enables researchers to study the impact of different diagnosis/feedback configurations on learner outcomes, user engagement, and other factors impacting the success of a CAPT system. Once more is known about which diagnosis/feedback types are most effective in which situations, this tool could become a useful component of an intelligent CAPT system, in which models of relevant aspects of the learning context (e.g. the learner's skill level, learning progress, or personal preferences) are used to automatically choose the most appropriate diagnostic and feedback methods.

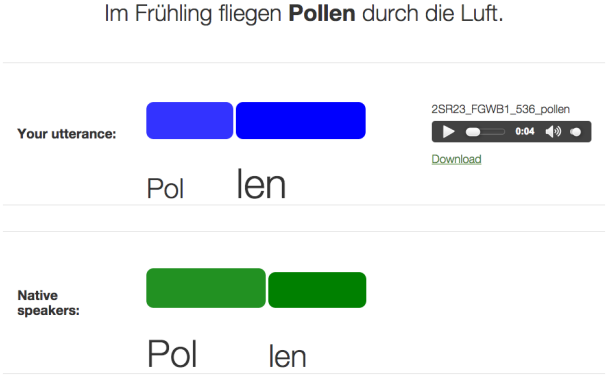


Figure 1: Example of feedback delivery in de-stress

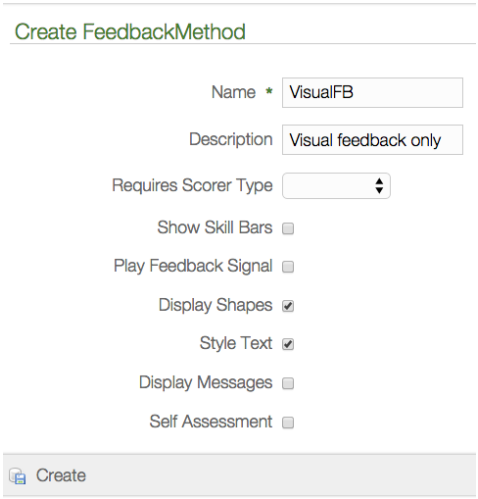


Figure 2: Administrative interface offering control over the feedback types delivered to the learner.

## 3. References

[1] A. S. Vakil, "de-stress," http://github.com/vakila/de-stress.

[2] LORIA Speech Team, "JSnoori," http://jsnoori.loria.fr.

[3] A. S. Vakil and J. Trouvain, "Automatic classification of lexical stress errors for German CAPT," in *SLaTE 2015*, submitted.