

## **Bachelor Thesis from Vera Bernhard** (Submission date: June 1<sup>st</sup>, 2021)

### **Titel:**

Automatic Lexical Stress Detection in Isolated English Words

### **Abstract:**

We propose a pipeline for automatic lexical stress detection in isolated English words. It is designed to be part of the computer-assisted pronunciation training application MIAPARLE that aims to improve stress production. The pipeline automatically segments audio input into syllables over which duration, intensity, pitch, and spectral information is calculated. Since the stress of a syllable is defined relative to its neighboring syllables, the values obtained over the syllables are complemented with differential values to the preceding and following syllables. The resulting feature vectors, retrieved from 1011 recordings of single words spoken by English natives, are used to train a Voting Classifier composed of four supervised classifiers, namely a Support Vector Machine, a Neural Net, a K Nearest Neighbor, and a Random Forest classifier. The approach classifies stress patterns of a single word with an F1 score of 94% and an accuracy of 96%.