

Detection of dyslexia from child's read speech

Bachelor's thesis
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Goals

Determine if and how well can dyslexia be detected in audio recordings of Czech speech by training multiple classifiers using various approaches.

Create a simple web application demo which classifies dyslexia from an audio recording of read speech.

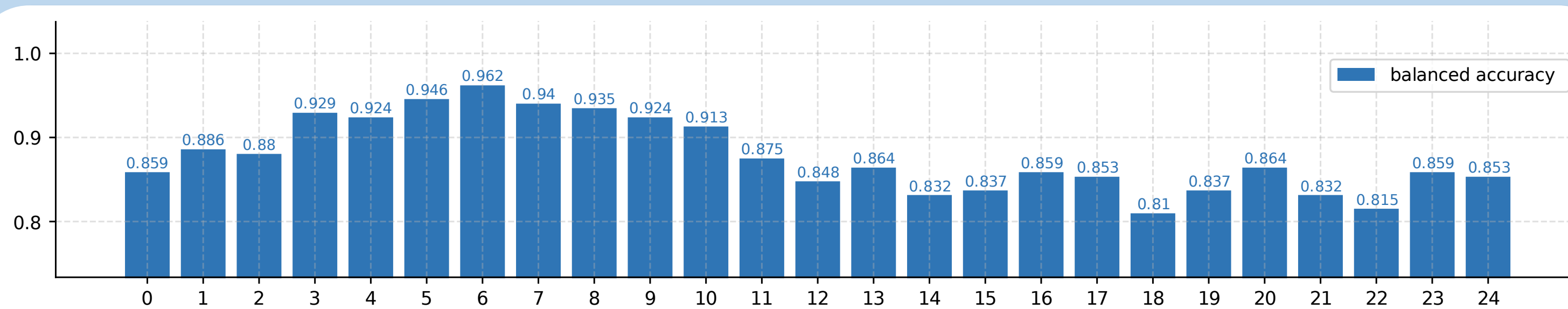
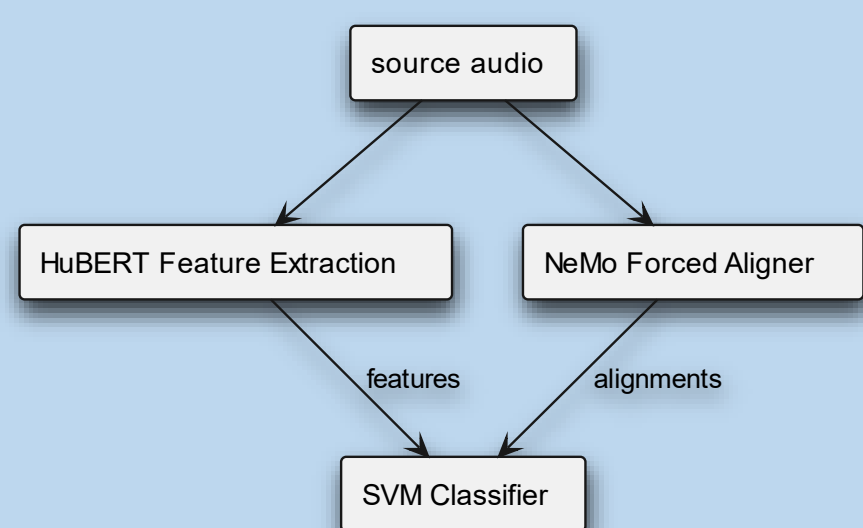
Dataset

Audio recordings captured in conjunction with eye-tracking data by the Faculty of Arts (MUNI).

- 138 samples of standardized text being read
- Simple dyslexic/intact classification

Features from embeddings

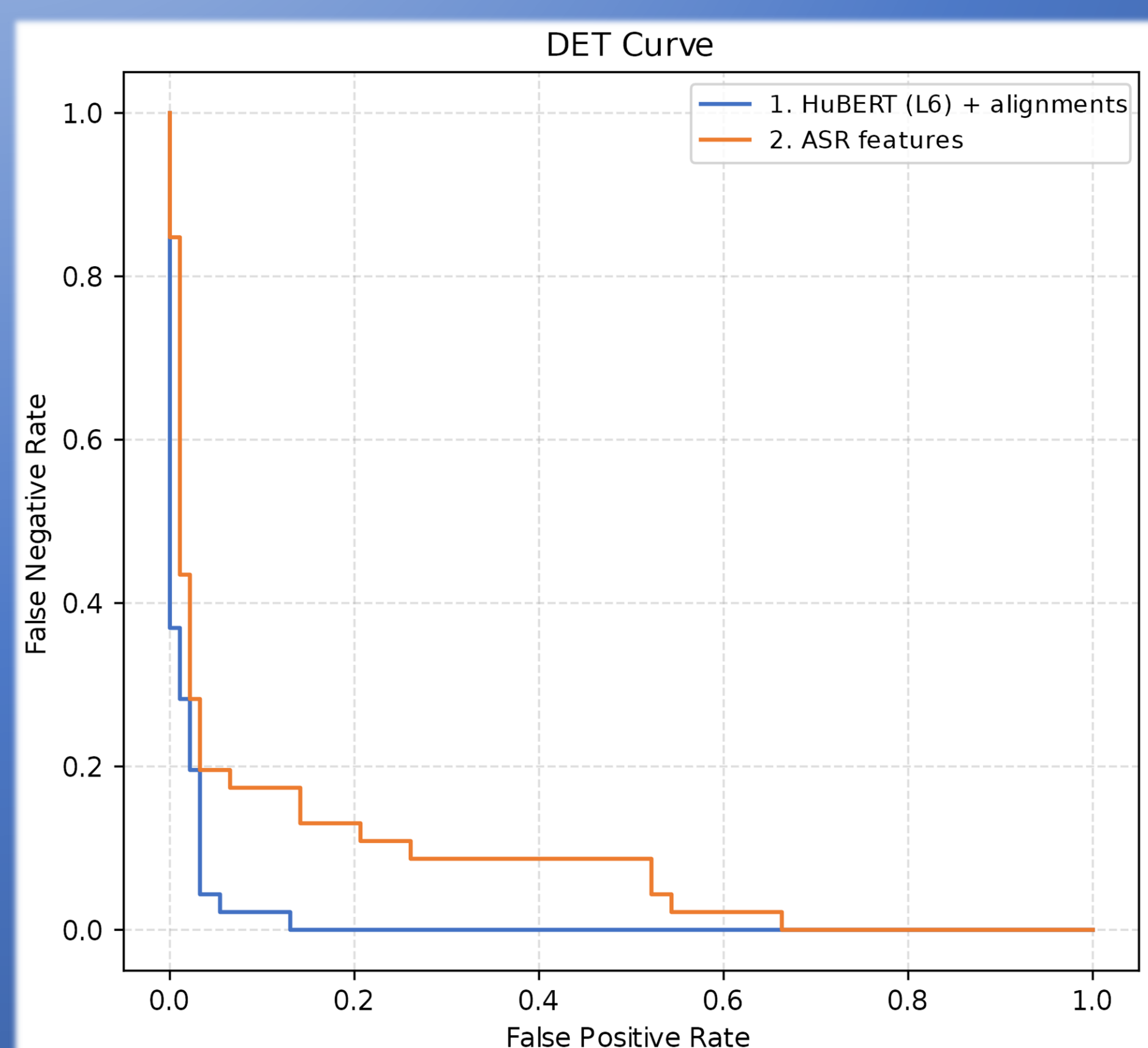
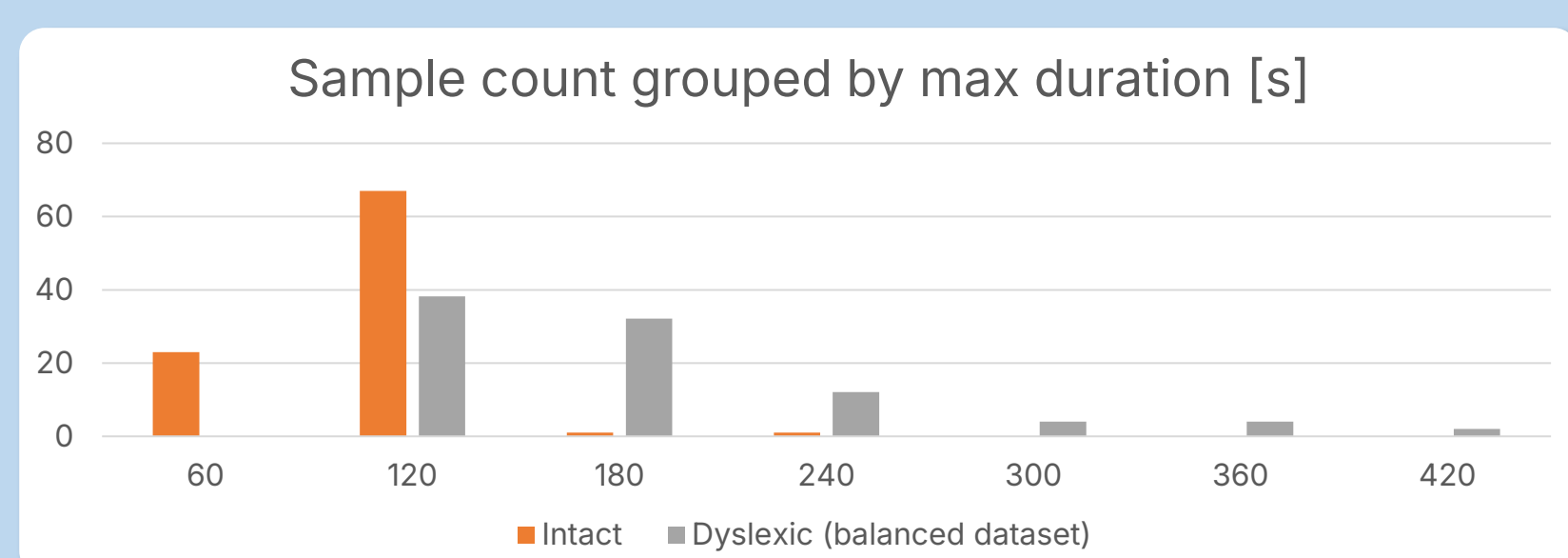
HuBERT-Large-FT – features from hidden states (24+1 layers) used to train a linear SVM model. Experimenting with various feature-preprocessing methods (e.g. splitting based on word-level alignments).



Features from ASR

Speech fluency features from ASR timestamps – partial symptoms of dyslexia:

- Speech pace (letters/s)
- Silence/speech ratio
- Audio signal-to-noise ratio



Results demo

Web demo showing a selection of dyslexia classifying SVM models.

