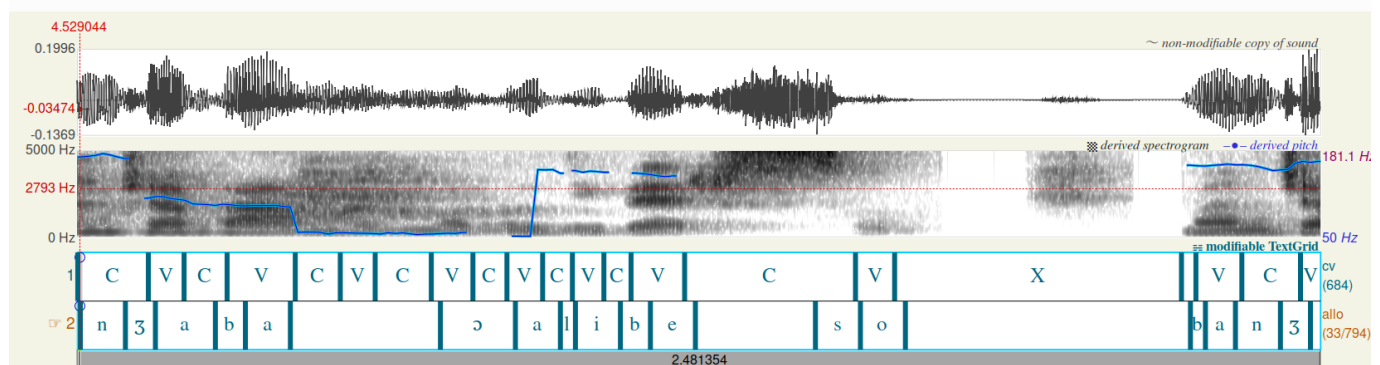# Report: Prediction of pV and VtV

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Aim

Investigate the automatic prediction of parameters pV and VtV as described in the paper *Speech Rhythm Variation in Early-Stage Parkinson's Disease: A Study on Different Speaking Tasks*,

Prerequisites

- We got 21 audio files from control group with ground-truth Praat alignments of V and C.
- The audio files were not yet segmented, i.e. include speech pauses.
- The audio format was varying (mp4, ogg, wav with faulty header)

Procedure

1. convert all files to wav format
2. convert Praat annotations to audformat
3. compute pV and VtV for ground-truth annotations
4. automtically transcribe all wav files to phonemes with allosaurus (prediction) and assign C, V and X (for pause) from ipa table
5. compute pV and VtV for predicted annotations
6. compare pV and VtV for groundtruth and prediction on all files
7. try the automatic pV and VtV with Spanish Parkinson's disease data (LREC 2014)

Results

Manual inspection of aligned truth and prediction in Praat already shows a lot of un-alignemnt.

Especially pV did not work very well, as shown in the scatter plot for VtV and pV, with low Mean Absolute Error for PV: 7.002, and VtV: 0.008.

VtV prediction is highly correlated with ground-truth: Pearson correlation for VtV: 0.945, pV: 0.254 but, according to the paper, pV is more important.
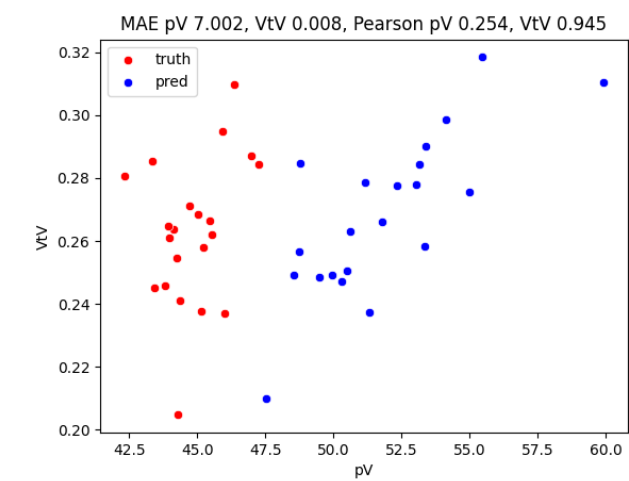
Here's a regression plot for only pV, with a very low Pearson's coefficient.
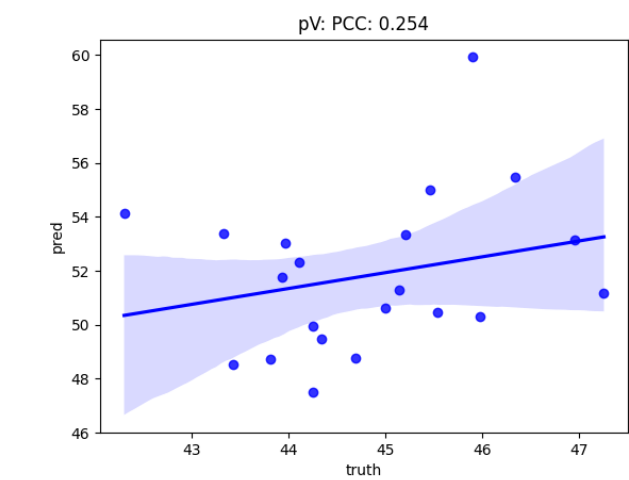
And here is one for vTV, with a much higher one.