Modeling segmental durations using the Naive Discriminative Learner

Mittwoch
08.03.2017
17:00 – 17:30
B3 2, 0.03

Fabian Tomaschek
Universität Tübingen
fabian.tomaschek@uni-tuebingen.de

Benjamin V. Tucker
University of Alberta
bvtucker@ualberta.ca

It is well known that acoustic durations of words and segments are co-determined by lexical properties such as frequency of occurrence (Zipf 1935, Bell et al. 2003, Gahl, 2008; Cohen Priva, 2015). The current study explores the use of a predictor measuring learning for modeling segment durations in German: weights and activations from the Naive Discriminative Learner Model (NDL: Baayen et al., 2011). Given a set of input units (diphones and triphones), the network estimates their connection or association strengths to a set of output units (word forms), providing a measure of how well word forms are associated with their phonetic markup.

The project investigates how the goodness of fit of the learning measures provided by NDL varies with the complexity of the cue-to-outcome structure. Also, we intend to investigate how multi-collinearities present in the data affect the results and how to cope with them. Finally, we will compare the goodness of fit of learning measures with traditional predictors such as frequencies and transitional probabilities.

References: • Baayen, R. Harald et al. (2011): An amorphous model for morphological processing in visual comprehension based on naive discriminative learning. *Psychological review*, 118 (3). p.438–481 • Gahl, S. (2008): "Thyme" and "Time" are not homophones. Word durations in spontaneous speech. *Language*, 84 (3): p. 474–496. • Cohen Priva, U. (2015): Informativity affects consonant duration and deletion rates. *Laboratory Phonology*, 6 (2). p. 243–278. • Zipf, G. (1935): *The psycho-biology of language. An introduction to dynamic philology*. Cambridge: MIT Press.