Advanced speech data processing in R

Term 2

Module Lead: Dr Josef Schlittenlacher (j.schlittenlacher@ucl.ac.uk)

Module Description:

Data-driven approaches have transformed science and continue to lead the way to exciting new discoveries. This applies to speech data as well, where machine learning offers a variety of techniques that allow analyses for small and large amounts of data, labelled and unlabelled data, help collecting data in a principled and efficient way, or enable informed decisions based on probabilistic estimates. This course introduces advanced methods for speech data processing a portfolio of machine-learning techniques that are not deep learning (which are covered in PALS0039) and frequently used in speech data science. Topics include, among others, data preparation, supervised and unsupervised learning, Bayesian approaches, clustering techniques, decision trees, Markov models and active learning.

The course is intended to enable students to apply machine-learning techniques to speech data in practical applications. Thus, the focus is on acquiring the skills and understanding from an applied perspective, to obtain the necessary mathematical understanding without going too much into depth, and to learn background knowledge to prepare data from speech science for an insightful analysis.

Some prior experience in R is necessary. Students are expected to be familiar with an R environment, have a basic understanding of programming concepts like variables, functions and classes, to be able to load datasets, perform basic analyses and produce graphs. This knowledge can for example be obtained in PALS0047 - Programming in R, but having obtained that experience from another course, research project or elsewhere is also fine.

Assessments:

Coursework: 100% (3000 words) Coursework