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Visible Vowels: a Tool for the Visualization of Vowel Variation

Visible Vowels is a web app for the normalization and visualization of vowel measurements, in particular f0, F1, F2, F3 and duration. During the development the aim was to combine userfriendliness with a maximum of flexibility and functionality. The user can convert Hz values to scales such as Bark, Mel and ST. Additionally, 12 methods for vowel normalization are available. Transformed values can be saved as a data file. Visible Vowels presents the data in 'live view': with every change in the settings the graph is immediately adjusted accordingly. This makes the comparison of, for example, different normalization techniques extremely easy. Line graphs, scatter plots (2D and 3D), dot plots and bar graphs can be created. The generated graphs can be saved in different file formats.

The input file to be used by the app is an Excel spreadsheet with the first column containing the speaker labels, and the second containing the vowel labels. An arbitrary number of columns which represent categorical variables such as location, language, gender, age group, etc. may follow. The first column containing measurements is `duration'. Finally, a set of five columns should follow: `time', `f0', `F1', `F2' and `F3'. This set of five columns may be repeated for as many time points (20%, 50%, etc.) as the user wishes.

The app is implemented in R, using Shiny, a web application framework developed by Rstudio. The main packages used are shiny, shinyBS, ggplot2 and plot3D. Visible Vowels is available via: visiblevowels.org. The app will become available as the R package 'visiblevowels' in the CRAN repository which makes it possible to install the app locally and to run as a standalone program.

In this poster the possibilities of the app will be demonstrated on the basis of a dataset from Van der Harst (2011).

Reference

Sander Van der Harst (2011), The Vowel Space Paradox. A Sociophonetic Study on Dutch. LOT Netherlands Graduate School of Linguistics 273. Dissertation Radboud University, Nijmegen