Praat – doing phonetics by computer

Praat is a free, versatile and well maintained application program for speech analysis. It is widely used all around the world. Praat is completely open source and it works in most operating systems (excluding mobile devices). Praat is being developed by Paul Boersma and David Weenink at the University of Amsterdam.

At first sight, the user interface in Praat can be a bit difficult to comprehend, in case you are used to regular office programs or if you have been using another analysis tool. So, there is a threshold for new users – especially if you feel a bit shy to try out all the different buttons and commands and you cannot spend much time and effort on browsing through the internal manual.

Flexibility, openness and scriptability are some of the best properties of Praat. Depending on the user's preferences and goals, the same functionalities can be implemented in many alternative ways and it is possible to combine them creatively into automatic workflows with scripts. Even a large speech corpus can be analysed and measurements can be gathered automatically in the desired manner, given that the sound files have been annotated in a suitable way.

In this course, we will go through some of the basic functionalities in Praat. You will also be offered instructions and background information for performing some of the most important acoustic analyses. The goal is to gain an understanding of what methods you could potentially apply in your own work and studies. Please note, however, that small changes and updates may sometimes occur in the menu commands and the functionalities that are available in Praat.

What can you do with Praat?

With Praat, one can

- listen to audio files and selected portions of them
- inspect the waveform and various acoustic visualisations that describe properties of the audio signal stored in a sound file
- edit sound files
- manually segment and label (i.e., annotate) sound files
- coarsely align the phone segments and words in a previously delineated and transcribed utterance, sentence or a similar unit with the audio signal, under certain conditions (NB: this is a language specific feature in Praat!)
- measure durations of units that have been annotated or otherwise delineated from the speech signal
- perform acoustic analyses from speech samples (e.g., pitch, spectrum analysis, formants, jitter, shimmer etc.)
- automatically or semi-automatically analyse large speech corpora and use the Praat scripting language to extend the functionalities available in Praat
- create high-quality plots and graphs for publications
- run statistical analyses from data in Praat (results can also be exported to statistical programs for further analysis)

- manipulate the pitch and durations in a speech sample by using the PSOLA resynthesis method (*Manipulation*; see the internal manual in Praat)
- build and run listening experiments
- use articulatory speech synthesis or synthesize speech on the basis of pitch, formants and intensity parameters (see the internal manual in Praat)
- open 32 or 64 channel EEG files (EEG = electroencephalography) and calculate ERPs from them (*ERP, event-related potential*)
- use certain types of artificial neural nets (*feed-forward neural net*; see the internal manual in Praat)
- record sound; however, the recording tool in Praat is not very sophisticated, so it is often more practical to make the recordings with some other tools (e.g., Audacity and many other free programs)
- and a whole lot more!

What can you not do with Praat?

With Praat, one cannot

- annotate video files (although this feature may become available in the future)
- obtain undisputable results from acoustic analyses without understanding how the analyses work
- automatically recognise speech…
- to get it all at once without practising at all…