

LING 576 Acoustic Phonetics

Spring 2009

Rod Casali

Topic number 2: Speech Analysis Software Intro & Overview

1-13-09

1. Historical development of speech analysis software in SIL CECIL program

- Stands for "Computerized Extraction of Components of Intonation in Language."
- First released in 1990.
- Originally a DOS program.
- Used an external sound card / hardware box that connected to a computer via the parallel printer port.
- Developed largely with tone analysis in mind.
- Files saved in an idiosyncratic format (.utt files) specific to CECIL.
- Had rudimentary spectrogram generation capability.

The usefulness of spectrograms was limited somewhat by computer hardware (especially low resolution screens) available at the time.

- A Windows version, WinCECIL, was released in 1995. (This is still available from the SIL web site.)

Speech Analyzer

- First came out in 1997.
- Somewhat similar functionality to WinCECIL, but has become more user-friendly.
- Nice displays, including color spectrograms.

These take some getting used to however if you're used to conventional black and white spectrograms.

- Accepts standard (.wav) files.

2. Non-SIL speech analysis software

Free software:

- RTSPECT: Windows Tool for Real-time Waveforms & Spectra
- ENHANCE: Windows Tool for Enhancement of Speech Signals
- WASP: Waveforms Annotations Spectrograms & Pitch
- WaveSurfer

- SFS - Speech Filing System
- PRAAT

All of these programs are briefly described (along with links) at the following web site:

- *Speech & Hearing - Software Tools*
(<http://www.speechandhearing.net/laboratory/tools.html>)

A larger list, that includes commercial as well as free software, is found at the following site:

- *Speech analysis and transcription software*
(http://liceu.uab.es/~joaquim/phonetics/fon_anal_acus/herram_anal_acus.html)

Some notable commercial packages (see the *Speech analysis and transcription software* site above for links):

- Signalize
- Macquiner / PCquiner (Scicon R&D, Inc.)
- CSL, Computerized Speech Lab (Kay Elemetrics)

CSL is a very sophisticated combination hardware / software package.

3. Speech Analyzer overview

Some general notes:

- Free download (<http://www.sil.org/computing/speechtools/>).
- Current version is 3.0.1.
- Has a user-friendly interface.
- Tutorial and help system, with exercises.

Some useful help materials included with earlier versions, including a very nice overview of acoustic phonetics by Joan Baart, are unfortunately no longer available in the current version.

Basic tasks that can be carried out in Speech Analyzer:

- Opening existing .wav sound files
- Listening to sound files in various modes
- Editing sound files
- Recording sound files

- Adding phonetic transcriptions to sound files

Opinion: Some may find this useful, but it is time consuming and not necessarily worth the effort, except in cases where a display from Speech Analyzer is to be included in a publication.

- Saving background information with a sound file.

Note that both phonetic transcriptions and background info are saved in a separate file with an .saxml extension that must be kept in the same folder as the sound file itself.

Graphic displays for analytical tasks:

- Waveform
- Fundamental frequency
- Intensity envelope (limited usefulness)
- Spectrogram
- Instantaneous spectrum
- Vowel space plot (not recommended)

We will look at all of these displays in more detail.

4. Some software options for phonetic data management

- Phonology Assistant (http://www.sil.org/computing/pa/pa_download.htm)
- Dekereke (<http://casali.canil.ca>)