Speech Signal processing 2010

David Weenink

February – March 2010

1 Administrativa

Master General Linguistics
Module Speech Signal Processing
Code TW85231
Points 5 ECTS
Precondition Master, reasonable mathematical background or affinity
Period Semester 2, block 1 (February–March 2010)
Information Onderwijssecretariaat Taal- en Letterkunde
also IFA teaching
also The page in the studiegids
Teacher David Weenink
Time & Place Wednesday 9:00–12:00, Bungehuis K302
Language English
Book SSPBook D.J.M. Weenink, Speech signal processing by Praat, To be published in 2009
(book will change during the course, don’t print it)

2 Contents

Getting students familiar with advanced techniques used in speech signal analysis, speech synthesis and speech recognition. This year we will work towards the generation of artificial signals and test relation between formant frequency analysis and bandfilter methods on the TIMIT database.

2.1 Goals

The following goals:

• Spectral analyses like band filter analysis and Fourier spectra.
• Filtering and convolution.
• Autocorrelation and pitch determination.
• Performing analyses automatically by scripting.
• Formant synthesis and analysis

2.2 Examination

Weekly assignments and final assignment. All weekly assignments have to be fulfilled to be able to participate in the final assignment. Communication via BlackBoard>Assignments.

3 The weekly classes

3.1 Week 1, Wednesday February 3

Administrativa. Recapitulation of signals, sine, cosine, phase and sampling.
Scripting
Literature: Mathematics: Weenink (2010, Ch. 1,2,3,4 and App. A & B).

3.2 Week 2, February 10

Spectra
Theory: SSPBook chapter 7 on spectra;
Assignment 1.

3.3 Week 3, February 17

Information on synthesis of stop-liquid clusters see Williams (1996).
CV and C synthesis/analysis see Harrington and Cassidy (1999, Ch. 4)
See http://www.fon.hum.uva.nl/david/ma_ssp/2010/ for these articles.
Assignment 2.

3.4 Week 4, February 24

More synthesis.
Assignment 3.
3.5 Week 5, March 3
Assignment 4.

3.6 Week 6, March 10
Bandfilter analysis, Pitch analysis, Discriminant analysis, PCA

3.7 Week 7, March 17

References


