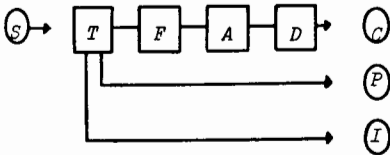


PRELIMINARY STUDIES FOR THE AUTOMATIC RECOGNITION OF GERMAN
SPEECH SOUNDS

Antonio Almeida, Institute of Phonetics, University of Cologne

The intention of the current work is to lay the fundamentals of a system which later on should be able to give a broad transcription of German spoken utterances. For this purpose and before we proceeded to design the system described below, we treated the acoustic data from vowels of ten female subjects by means of discriminant analysis, the results of this research being published in Almeida (in print). We hope to get on to the analysis of German consonants on the same basis before we meet in Copenhagen.

The provisory architecture of the system has the following components:



1) Signal input *S*; 2) Periodicity detection or adaptive time window *T*; 3) Fourier analysis *F*; 4) Data reduction by averaging spectra *A*; 5) Discrimination of sounds *D*; 6) Output of a nonlinguistic segmental chain *C*, of a pitch curve *P*, and of an intensity curve *I*.

At the moment we are making efforts to link the different FORTRAN routines for points 1 to 4 into a coherent system, moreover a real time Fourier analysis is at the verge of completion. We hope to begin with the implementation of the discriminatory component soon.

As stated above, the segmental output will be nonlinguistic, that is to say there will be as many identified segments as average spectra and so a 1 s utterance will have 33 segments if you use a 10 ms window and average on three windows. The conversion of these nonlinguistic phonetic data into broad transcription will be an enterprise for coming years.

Reference

Almeida, A. (in print): Nasalitätsdetektion und Vokalerkennung (=Forum Phonicum 17), Hamburg: Buske-Verlag