Professor Rolf Carlson
Director of
graduate studies

Graduate Level

Graduate students comprise about one third of the personnel at the department. Graduate studies towards the Doctor of Science degree require a minimum of four years after the M.Sc. graduation. Since most students are financed by research projects this time is generally exceeded.

The requirements include theoretical studies and a thesis. The thesis may be composed of a number of publications. The theoretical studies are individually tailored within the domain of graduate courses. Requirements include participation in research seminars and attending special lectures which supplement literature assignments. Credits are also given for certain undergraduate courses on top of the undergraduate requirements such as courses in linguistics and phonetics taken at Stockholm University. In addition to the teaching arranged by the staff at the department, special "bullet" courses are organised every year. At such an event a well-known researcher is invited to give a course during a limited period of time, typically a week. Several students at the department have participated in European Summer School and similar summer schools in Europe.

The graduate studies are organised according to two main programmes, with two subtopics each.

1. Speech and Music Communication

The Speech and Music Communication programme includes studies of human communication primarily with the help of acoustic signals such as speech and music. Communication with visual signals such as facial gestures during speech production is also included. The programme contains descriptions, theories, models and applications covering all parts of the communication chain: production - acoustic transmission - perception - understanding or impression.

The programme has two subtopics**: *Speech Communication*** and ***Music Acoustics.***

2. Acoustic Signal Processing

The Acoustic Signal Processing programme covers theory and application in the field of acoustic signal processing, signal coding and information transmission, related to human sound production and signal processing by the human senses.

The programme has two subtopics***: Hearing Technology*** and ***Speech Signal Processing.***

Graduate School of Language Technology

Starting the fall of 2001 the department is involved in the new national Graduate School of Language Technology (GSLT). It is one of 16 new national graduate schools funded by the Swedish government. It is hosted by Faculty of Arts, Göteborg University, and is a collaboration between leading centres in language technology in Sweden. Besides Göteborg University, the following partners are designated by the Swedish government: Högskolan i Borås, Högskolan i Skövde, Växjö University, Chalmers University of Technology, KTH (Royal Institute of Technology), Linköping University, Stockholm University, and Uppsala University. Further academic institutions may be added to the graduate school. Students may be placed at any of these institutions. The school aims to integrate research on speech and language and to provide a sound basis in both theoretical foundations and applications oriented research. It is committed to an international profile and welcomes applications from outside of Sweden. Four doctoral students from the department are directly involved and supported by this school.

Rolf Carlson represents KTH on the GSLT board.

Graduate Level Courses during Year 2001

2F5502 Source Coding (6 cr)

Bastiaan Kleijn

The course treats the principles of the encoding of speech, audio, video, and images at low bit rates. Source coding techniques such as scalar and vector quantization, orthogonal transforms, and linear prediction are introduced and their performance is analyzed theoretically. The theoretical bounds on the performance of source coders are discussed.

GSLT: Speech Technology I (5 cr)

Teachers: Rolf Carlson, Björn Granström, David House and Kjell Elenius

The aim of this course is to give an overview of speech technology, some of the underlying theories and models and how these are integrated into applications, such as multimodal dialog systems. The course is aimed both at students with limited knowledge of the field, for whom it is compulsory within GSLT, and at students with a more extensive background in speech technology, who will be expected to take a more active part in the discussion of current research. In this way, the course is meant to contribute to the common platform for students with different backgrounds within GSLT, Graduate School of Language Technology.

The course is divided into 5 parts: Introductory lectures; Reading the listed material; Individual practical exercise; Preparing a term paper; and a Closing seminar including discussions, practical exercises and presentation of the term papers.

Reading course in Speech Synthesis (5 cr)

Björn Granström

Analysis of a number of text-to-speech systems, both research systems and commercial applications, with special focus on synthesis methods, evaluation methods and synthesis of extralinguistic features, such as emotions and emphasis.

Bullet course: Prosody as a marker of information status

Marc Swerts, IPO Eindhoven, Holland
April 2 – 4, 2001

Prosody can be defined as the ensemble of suprasegmental speech features (speech melody, tempo, rhythm, loudness, etc.). The three lectures will focus on the use of prosody to mark the status of the information which is exchanged between speaking partners in natural dialogue.

Further Education Courses

Grunderna i talteknologi för näringslivets intressenter,
22-23 november, 2001
Centrum för talteknologi (CTT)

http://www.speech.kth.se/ctt/kortkurs_web.htm

Inger Karlsson

David House: Språk och fonetik

Björn Granström & David House: Multimodal talsyntes

Kjell Elenius & Mats Blomberg: Taligenkänning

Mats Blomberg: Talarkaraktärisering och talar-verifiering

Rolf Carlson: Dialogsystem

Kåre Sjölander, Botond Pakucs, m.fl.: Laborationer, talanalys och talsyntes, dialogsystem.

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