DT2112 Speech Technology 7.5 credits

Talteknologi

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

The official course syllabus is valid from the autumn semester 2021 in accordance with Head of School decision: J-2021-0878.Decision date: 15/04/2021

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

Single course students: At least 60 ECTS of which 30 ECTS within Mathematics or Computational Lingvistics. Furthermore English B, or equivalent.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After completion of the course, participants shall be able to:

- Describe speech from an acoustic, phonetic, and linguistic perspective
- Explain how computers recognize speech with statistical methods, and evaluate the recognition results
- Describe and judge different methods used to produce speech with computers
- Analyze speech-driven dialogue systems with respect to application, components, functionality and user aspects
- Describe how evaluation of speech technology systems work and describe the special requirements that are posed by this type of system
- Design and describe data collections for speech technology research and development
- Give an account of available state-of-the art speech technology and exemplify the current speech research on e.g., mobile systems and IT applications
- Apply the theoretical knowledge in small speech technology projects

Course contents

The course Speech Technology deals with research and development in speech technology and also povides basic insights in speech, language and hearing. The course contains segments concerning:

- Linguistic theory and phonetics
- Speech production by humans (speech physiology and acoustics) and computers (text-to-speech synthesis)
- Speech perception by humans (hearing and psycholinguistics) and computers (speech recognition)
- Multimodal dialogue systems for human-computer interaction with speech and vision
- Practical speech technology studies and experiments
- Methods for evaluation of and experimentation in speech technology
- Data collection for speech technology research and development

Examination

- TENA - Home exam, 3.5 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project and report, 3.5 credits, grading scale: A, B, C, D, E, FX, F
- LABB - Research laboratory assignment, 0.0 credits, grading scale: A, B, C, D, E, FX, F
- LABA - Laboratory assignments, 0.5 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Other requirements for final grade

- Active participation in scheduled activities
- Pass on labs (timely)
- Pass on project bid (timely)
- Pass on project presentation (timely)
- E or better on project report (A-E, decides 50% of end grade)
- E or better on home exam (A-E, decides 50% of the end grade)

Pass on labs, project bid, and project presentation are necessary in order to continue the course. Late hand-in of home exam or project report results a grade lowering (one step). One reexam is given, with a limited range of passed grades (B-E).

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.