FEL3311 Distributed Optimisation 8.0 credits

Distribuerad optimering

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

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

Establishment

Course syllabus for FEL3311 valid from Autumn 2013

Grading scale

Education cycle

Third cycle

Specific prerequisites

Entry requirements for this course is equivalent to master exam in Electrical Engineering, or corresponding and with basic knowledge in optimization and statistics methods.

Language of instruction

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

Intended learning outcomes

After the course the student will be able to:

- Know basic terminology and concepts convex optimization.
- Solve optimization problems using:
- Gradient and sub-gradient methods,
- Optimal first order methods,
- Dual decomposition methods,
- ADMM methods,
- Gossiping algorithms.
- Handle random components in optimization problems using:
- Stochastic approximation theory,
- Simulated-based techniques (Glauber dynamics, simulated annealing),
- Distributed implementation of the above tools.
- Know the outcome of the interaction of selfish players in repeated games. Get familiar with:
- The replicator dynamics,
- Fictitious play,
- No-regret learning,
- Trial and error learning,
- and the tools to analyse their dynamics.

Course contents

Disposition

The course is divided into the following parts:

1. One and half month with lectures and tutorials covering all the course material.
2. Homework and project sessions.
3. 72h take-home exam.

Course literature

Utvalda artiklar samt föreläsningsanteckningar

In the course, students will have to read a couple of selected papers.

Equipment

There is no required equipment.

Examination

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.

Other requirements for final grade

The requirement for final grade is to participate at the course lectures, to participate to the project sessions, and to pass the written take-home exam.

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.