DD2447 Statistical Methods in Applied Computer Science 6.0 credits

Statistiska metoder i datalogin

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

Establishment

Course syllabus for DD2447 valid from Autumn 2016

Grading scale

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

Education cycle

Second cycle

Main field of study

Computer Science and Engineering

Specific prerequisites

Single course students: 90 university credits including 45 university credits in Mathematics or Information Technology.

Language of instruction

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

Intended learning outcomes

After successfully taking this course, a student should be able to:

explain and justify several important machine learning methods,

account for several types of methods and algorithms used in the field, implement them using the book, and extend and modify them,

critically evaluate the methods' applicability in new contexts and construct new applications,

follow research and development in the area.

Course contents

Basic statistical concepts and basic probability theory.

Generative models.

Bayesian inference.

Directed graphical models.

Undirected graphical models.

Exact inference for graphical models.

State space models.

Particle filters.

Monte Carlo estimation.

Sequential Monte Carlo.

Markov Chain Mote Carlo.

Clustering.

The Dirichlet process.

Course literature

Machine Learning A Probabilistic Perspective av Kevin P. Murphy.

Kevin P. Murphy's "Machine Learning A Probabilistic Perspective"

Examination

- INL1 - Assignment, 6.0 credits, grading scale: A, B, C, D, E, FX, 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

Assignments and a project (INL1; 6 university credits)

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.