FDD3431 Graduate Course in Machine Learning 6.0 credits

Doktorandkurs i maskininlärning

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 FDD3431 valid from Spring 2013

Grading scale

Education cycle

Third cycle

Specific prerequisites

Language of instruction

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

Intended learning outcomes

The objective of this course is to give students

·   basic knowledge about the key algorithms and theory that form the foundation of machine learning and computational intelligence

- a practical knowledge of machine learning algorithms and methods

so that they will be able to

- understand the principles, advantages, limitations and possible applications of machine learning

- identify and apply the appropriate machine learning technique to classification, pattern recognition, optimization and decision problems.

Course contents

The course is intended for graduate students in computer science and related fields such as engineering and statistics. The course addresses the question how to enable computers to learn from past experiences. It introduces the field of machine learning describing a variety of learning paradigms, algorithms, theoretical results and applications.

It introduces basic concepts from statistics, artificial intelligence, information theory and control theory insofar they are relevant to machine learning. The following topics in machine learning and computational intelligence are covered in detail

-concept learning

-decision tree learning

-Bayesian learning

-artificial neural networks

-instance based learning

-computational learning theory

-evolutionary algorithms

-reinforcement learning.

Course literature

To be announced at least 4 weeks before course start at course web page. Previous year: T. Mitchell, Machine Learning, McGrawHill was used.

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.

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.