CM2026 Advanced Machine Learning for Data-driven-Health 7.5 credits

Avancerad maskininlärning för datadriven hälsa

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

Establishment

The course plan with diary no. C-2024-1625 applies from VT2026 according to faculty board decision: C-2024-0635. Decision date: 2024-10-02

Grading scale

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

Education cycle

Second cycle

Main field of study

Technology and Health

Specific prerequisites

Knowledge of programming, equivalent to 6 credits

knowledge of linear algebra, corresponding to 6 credits

knowledge of statistics and probability, equivalent to 6 credits

and

basic knowledge of machine learning and artificial intelligence, corresponding to completed course CM1001 or CM2011

English 6

Language of instruction

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

Intended learning outcomes

After passing the course, the student must be able to

· explain and justify several important methods of machine learning

· describe several types of methods and algorithms used in the field of deep learning and inference methods

· implement and apply several types of methods, models and algorithms used in the field based on a high-level description of health data

· extend and modify the methods covered in the course

Course contents

- Dimensionality Reduction
- Graphical Models (Graphical Models)
- Variational Inference
- Bayesian learning
- Hidden Markov Models and Markov Decision Processes
- Graph Neural Networks

Examination

• PRO1 - Group Project, 2.5 credits, grading scale: P, F

• RED1 - Assignments, 5.0 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.

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.