EP271V Internet of Things and Artificial Intelligence 7.5 credits

Sakernas internet och artificiell intelligens

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

The official course syllabus is valid from the autumn semester 2022 in accordance with head of school decision: J-2022-3056. Decision date: 25/01/2022

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

- In total 180 higher education credits of which at least 90 higher education credits in electrical engineering, engineering physics or technical
- mathematics.
- Knowledge in one variable calculus, 6 higher education credits.
- Knowledge in computer communication, 6 higher education credits.

- Knowledge in probability theory, 6 higher education credits.
- The upper secondary course English B/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 should be able to:

- give an account of the central tools in communication technology for Internet of Things (IoT)
- design IoT systems
- give an account of central machine learning methods for IoT
- design machine learning methods for IoT systems

in order to:

- understand and explain which design options there are for a specific communication system
- be able to provide arguments for which type of performance that should be prioritised in the design of IoT systems and machine learning methods
- understand and explain machine learning design options for specific communication systems.

Course contents

The focus of the course is on machine learning methods and algorithms for communication protocols of Internet of Things (IoT). The course starts with an introduction of applications of network architecture. Thereafter, methods for communication protocols are treated and how these methods can be applied in the design of important aspects of the communication protocol stack. The course analyses machine learning algorithms that can be run on IoT systems, where data and calculations are distributed.

Examination

- LAB1 - Laboratory task, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB2 - Laboratory task, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB3 - Laboratory task, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project work, 1.5 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.

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.