EP2700 Principles of Wireless Sensor Networks 7.5 credits

Principer för trådlösa sensornätverk

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

Establishment

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

- Knowledge in one variable calculus, 6 higher education credits, equivalent to completed course SF1625/SF1673/SF1685.

- Knowledge in computer communication, 6 higher education credits, equivalent to completed course IK1203/EP1100.

- Knowledge in probability theory, 6 higher education credits, equivalent to completed course SF1900-SF1935.

- Knowledge in signals and systems, 6 higher education credits, equivalent to completed course EQ1110/EQ1120.

- The upper secondary course English B/6.

Intended learning outcomes

After passing the course, the student should be able to

- give an account of the central wireless network protocols for IoT system design
- give an account of central machine-learning methods for wireless IoT systems
- design machine-learning methods for wireless IoT systems
- theoretically characterise performance for wireless communications protocols and machine-learning methods with distributed datasets

in order to

- understand and explain which design options there are for a specific wireless communication system
- understand and explain which design alternative is available for a specific machine-learning algorithm with distributed datasets
- be able to give arguments for which type of performance should be prioritised for designing wireless IoT systems and machine-learning methods
- understand and explain design alternative for machine learning for specific datasets distributed over a wireless IoT system.

Course contents

The course focuses on wireless networks and machine-learning methods for wireless Internet of Things (IoT). The course starts with an introduction of applications of wireless IoT. Thereafter, methods for wireless communications protocols with an emphasis on analytical performance analysis are treated. In the course, machine-learning algorithms that can be executed on wireless IoT systems are analysed, where data and computations are distributed. The interplay between wireless network and machine-learning is analysed based on theoretical methods.

Examination

- INL1 - Assignment, 1.0 credits, grading scale: P, F
- INL2 - Assignment, 1.0 credits, grading scale: P, F
- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- INL3 - Assignment, 1.0 credits, grading scale: P, 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.