DM1588 Sensor Programming for Media Technology 6.0 credits

Sensorprogrammering för medieteknik

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

Establishment

The official course syllabus is valid from the autumn semester 2021 in accordance with Head of School decision: J-2021-0878.Decision date: 15/04/2021

Grading scale

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

Education cycle

First cycle

Main field of study

Computer Science and Engineering

Specific prerequisites

Completed courses DD1318 Programming and scientific computations and DD1320 Applied computer science or the equivalent.

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 students should be able to:

- explain basis for digital logic and design of digital electronics
- program an embedded platform
- use a programmable embedded platform with sensors and actuators
- explain basic principles of electronics and logic of different sensors that is on market
- at a general level describe the electronics and logic of different sensors available on market
- explain the functioning of different sensors and actuators (e.g. ultrasonic sensors, temperature and humidity sensors, light sensors, accelerometers, magnetometers, pressure sensors, simple electrical and mechanical actuators),
- recommend sensors that are appropriate to analyse a specific input modality
- recommend actuators that are appropriate to implement a specific output modality
- identify sensor technology appropriate for a specific task
- program simple applications that uses input sensors and actuators
- suggest sensor technology for design of an interactive application

in order to

- be able to program embedded platforms and use sensors and actuators in design of interactive applications.

Course contents

The course gives an introduction to sensors and actuators and how they can be programmed and used in a commercial embedded system (as Arduino and Raspberry Pi). The course has both a theoretical part in which different properties of sensors and actuators and their respective input and output signals are examined and understood, as well as a practical part directed towards realisation of an interactive multi-modal installation.

Examination

- LAB1 - Laboratory work, 3.0 credits, grading scale: P, F
- PRO1 - Project, 3.0 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.