Embedded Perception Systems

Programme course

6 credits

Inbyggda perceptionssystem

TSBB18

Valid from: 2019 Spring semester

Determined by
Board of Studies for Industrial Engineering and Logistics

Date determined
2018-08-31

Main field of study
Computer Science and Engineering

Course level
First cycle

Advancement level
G2X

Course offered for
- Industrial Engineering and Management, M Sc in Engineering
- Industrial Engineering and Management - International, M Sc in Engineering

Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites
Programming, signals and systems, digital circuits, computer systems.

Intended learning outcomes
After the course, the student is able to:
- Program simple integrated hardware and software systems
- Connect inputs from sensors and outputs to contrel the hardware
- Do simple image processing on images from a camera
- Set up communication to and from the system, e.g., using WiFi

Course content
A project implemented on a Raspberry Pi.

The course does not introduce new concept and theory to any significant extent. Participants are assumed to be unfamiliar with image processing, and for this reason, a few lectures that introduce basic operations on images are included.

Teaching and working methods

The course is organized around simple embedded systems, such as the Raspberry Pi.

In a series of 2-3 projects, the participants will gradually become more and more familiar with this type of system, where different types of sensors are used to control hardware. The sensor can, for example, be a camera that produce digital images, and the hardware can be a small radio controlled car.

The projects starts with very simple systems, and gradually becomes more advanced. The final project may use a camera to control the car. Other types of sensors and hardware may also be used.

To a large extent, the course is about going from a product specification, in combination with documentation of the available hardware and software systems, to an implementation of the specification.

The projects are carried out by groups of 3-4 students.

Examination

PRA1	Projects	6 credits	U, G

Grades

Two grade scale, older version, U, G

Department

Institutionen för systemteknik

Director of Studies or equivalent

Lasse Alfredsson

Examiner

Lasse Alfredsson

Education components

Preliminary scheduled hours: 10 h
Recommended self-study hours: 150 h

Course literature

Other