

FÖRSLAG TILL PROGRAMNÄMND INFÖR ÅR

2017

NÄMND/NÄMNDER:

Förslagsställare (Namn, funktion, Inst/Enhet)

FÖRSLAGET GÄLLER:

a) EXISTERANDE KURS (Ange kurskod och kursnamn)

b) NY KURS (Ange kursnamn, årskurs, önskad läsperiod, schemablocksplacering. Bifoga utkast till kursplan.)

c) ÄNDRING I EXISTERANDE PROFIL/INRIKTNING (Ange Program och Profil/Inriktning. Bifoga beskrivning över vad förslaget går ut på.)

d) NY PROFIL/INRIKTNING (Ange Program och Profilnamn. Bifoga utkast till Profilbeskrivning.)

e) ÖVRIGT (Bifoga beskrivning över vad förslaget går ut på.)

PROGRAMNÄMNDENS BESKED:



FÖRSLAGET I DETALJ:

Aim:

The aim of this course is to give an introduction to the use of Artificial Intelligence (AI) techniques for robotic systems, through the use of simulated robot, actual hardware and widely used software packages, such as the Robot Operating System (ROS). The main focus of the course is for student to learn how the different components that constitute a robot: perception, control and deliberation interact with each other to form an autonomous system.

Learning outcomes:

After the course, the student will be able to:

- to list and explain important problems and techniques in the area of AI robotics,
- to use existing frameworks to develop an autonomous robot, and
- to design, implement and evaluate the algorithms needed to provide autonomous functionality to a robot in a simulated environment, and
- to transpose simulated tests to actual hardware, and
- to make written and oral presentations of their work.

Prerequisites:

An introductory AI course, Object-oriented programming (preferably in C++ or Python).

The student should consider taking some other related course among: Automated Planning, Sensor fusion, Computer Vision and Control Theory courses

Course content:

- Navigation: Localisation and path planning
- Scene Interpretation
- Control
- Decision-Making
- Robot Architecture and state machines
- Human-Robot Interaction

Possible Course book:

"Introduction to AI Robotics", Robin R. Murphy, The MIT Press, 2000

"Introduction to Autonomous Mobile Robots", Roland Siegwart, Illah Reza Nourbakhsh and Davide Scaramuzza, The MIT Press, 2011