



PHYSICS

FIM762 Intelligent agents, 7.5 credits

Intelligenta agenter, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Physics on 2016-09-22 and was last revised on 2017-06-13 to be valid from 2017-06-13, spring semester of 2017.

Field of education: Science 100%

Department: Physics

Position in the educational system

The course is elective within the master program in Complex Adaptive systems. The course is also elective within the departments other master programs.

The course can be part of the following programmes: 1) Complex Adaptive Systems, Master's Programme (N2CAS), 2) Physics of Materials and Biological Systems, Master's Programme (N2PMB) and 3) Physics, Master's Programme (N2PHY)

Main field of studies

Physics with Specialization in Complex Adaptive Systems

Specialization

AIN, Second cycle, has only first-cycle course/s as entry requirements

Entry requirements

Bachelor's degree in physics, mathematics, or equivalent.

Learning outcomes

The aim of the course is for the students to gain knowledge regarding human-machine interaction, in general, and intelligent (software) agents, in particular. Such systems are relevant in many different fields, such as driving assistance, health and elderly care, finance etc.

Knowledge and understanding

After completing the course, the students should be able to

- Implement (in C# .NET) and use various methods for image and video processing, speech synthesis, and speech recognition
- Put together various components (e.g. image processing, speech synthesis, dialogue etc.) to generate a complete software agent.
- Implement (in C# .NET) and use various advanced stochastic optimization methods in connection with intelligent agents
- Describe and compare various different applications of intelligent agents

Course content

- Programming in C# .NET for intelligent agents (throughout the course)
- Advanced methods in stochastic optimization
- Image processing
- Speech synthesis
- Speech and voice recognition
- Human-machine dialogue
- Applications (various)

Form of teaching

The course is organized as a series of lectures combined with project work. The projects are carried out either in pairs or by one student alone.

Language of instruction: English

Assessment

The examination is based on a project (a report should be handed in before the end of the course) as well as a written exam at the end of the course.

If a student, who has failed the same examined component twice, wishes to change examiner before the next examination, a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons to the contrary (Chapter 6, Section 22 of Higher Education Ordinance).

In cases where a course has been discontinued or has undergone major changes, the student shall normally be guaranteed at least three examination occasions (including the ordinary examination) during a period of at least one year from the last time the course

was given.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

Course evaluation

The students are given the opportunity to fill out an anonymous on line evaluation form.

The results of and possible changes to the course will be shared with students who participated in the evaluation and students who are starting the course.

Additional information

Literature: A compendium (to be completed in Dec. 2016) and a selection of scientific papers.