Course Syllabus

Artificial Intelligence 7.5 Credits*, First Cycle

Learning Outcomes

Knowledge and understanding

Upon completion of the course student will be able to:

- Describe concepts often coupled with artificial intelligence (AI) such as machine learning, search, heuristics, games, intelligence, agents, uncertainty, rationality, knowledge representation, no-free-lunch theorem, reasoning and planning
- Explain how systems can provide capabilities for reasoning under uncertainty
- Explain how supervised training and testing works, and how robustness, noise and data selection affect the ability to generalise
- Explain how presented AI algorithms work conceptually
- Compare the advantages and disadvantages of some basic AI algorithms
- Recall the historical development of AI and the current situation

Skills and abilities

Upon completion of the course student will be able to:

- Design, develop, implement and demonstrate AI algorithms using a programming language
- Evaluate quantitatively the performance of machine learning and search
- Select appropriate methods to address problems in the domain of AI
- Detect "overfitting" and suggest possible solutions to this problem

Values and attitudes

Upon completion of the course student will be able to:

- Discuss the effect on society of emerging technologies in AI and vice versa

Course Content

This course presents the broad area of artificial intelligence (AI). AI in the context of this course refers to the tools, techniques and methodologies that are used to automate a process.

The course covers the historical development of AI, the foundations of AI, including sustainability and ethical aspects, logic and automated reasoning, the concept of agents,

* 1 Credit = 1 ECTS

knowledge representation and reasoning, machine learning and search, including evolutionary computing.

The student receives trained in how to use selected AI algorithms and how to see their possibilities and limitations.

Assessment
Hand-in assignments (2.5 credits), laboratory work (2.5 credits), and written exam (2.5 credits).

Forms of Study
Lectures, workshops, laboratory work, hand-in assignments

Grades
The Swedish grades U–VG.

Laboratory work U-G.

In order to obtain a VG (pass with distinction) as a final grade for the whole course, students require VG in both the individual written exam and hand in assignments. In addition, a G (pass) in the laboratory work is required.

Prerequisites
Object-Oriented Programming 7.5 Credits, First cycle or other course in Fundamentals of Programming

Subject:
Information Systems

Group of Subjects:
Informatics/Computer and Systems Sciences

Disciplinary Domain:
Technology, 100%

This course can be included in the following main field(s) of study:
1. Information Systems
2. Microdata Analysis

Progression Indicator within (each) main field of study:
1. G1F
2. G1F

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Approved:
Approved 5 March 2020
Valid from 5 March 2020