

Introduction to Artificial Intelligence

Introduktion till artificiell intelligens
6 credits

Programme course

TNM119

Valid from: 2025 Spring semester

Determined by	Main field of study	
Board of Studies for Computer Science and Media Technology	Media Technology and Engineering	
Date determined	Course level	Progressive specialisation
2024-08-28	First cycle	G2F
Revised by	Disciplinary domain	
	Technology	
Revision date	Subject group	
	Computer Technology	
Offered first time	Offered for the last time	
Spring semester 2025		
Department	Replaced by	
Institutionen för teknik och naturvetenskap		

Course offered for

- Master of Science in Media Technology and Engineering

Prerequisites

Multi-variable analysis, linear algebra, statistics, programming

Intended learning outcomes

The aim of the course is for the student to gain insights in artificial intelligence, including classical machine learning techniques, deep learning and generative models.

After finishing this course the student should be able to

- reason about different machine learning techniques,
- reason on differences between classical machine learning techniques, deep learning, and generative models,
- identify the appropriate technique for solving different AI-related problems,
- apply common AI techniques to solve problems related to perception, reasoning and actions,
- reason about the challenges of keeping humans in the loop in autonomous systems,
- describe common ethical and societal challenges with artificial intelligence.

Course content

Fundamental concepts on history of AI and its significance, optimization techniques for AI applications, feature extraction, probabilistic reasoning, rule-based systems, reinforcement learning, supervised and unsupervised learning, Bayesian and regression models.

Teaching and working methods

Attendance is required for project presentation and examination of laboratory work.

Theories and practical uses of these theories are provided through lectures. Substantial laboratory work is included, where theories are transformed into practical knowledge.

Examination

LAB1	Laboration	3.5 credits	U, 3, 4, 5
PRA1	Project	2 credits	U, G
UPG1	Hand-in assignment	0.5 credits	U, G

The laboration module includes preparatory material, tasks to finish in computer lab room and examination through both oral presentation for a supervisor. The hand-in assignment includes self-study, a self written analysis and submission via Lisam. A project carried out in pairs or individually with presentation given at a final seminar where in-person attendance is required.

The final grade for the course is based on the grade achieved on the lab module, given a pass has been achieved on the other modules.

Grades for examination modules are decided in accordance with the assessment criteria presented at the start of the course.

Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is “Swedish”, the course as a whole could be given in Swedish, or partly in English. Examination language is Swedish, but parts of the examination can be in English.
- If teaching language is “English”, the course as a whole is taught in English. Examination language is English.
- If teaching language is “Swedish/English”, the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English depending on teaching language.

Other

The course is conducted in such a way that there are equal opportunities with regard to sex, transgender identity or expression, ethnicity, religion or other belief, disability, sexual orientation and age.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

The course is campus-based at the location specified for the course, unless otherwise stated under “Teaching and working methods”. Please note, in a campus-based course occasional remote sessions could be included.