Introduction to Practical Machine Learning

Introduktion till praktisk maskininlärning
2 credits

Programme course

TDDE77

Valid from: 2026 Spring semester

Determined by	**Main field of study**	
Board of Studies for Computer Science and Media Technology	Information Technology, Computer Science and Engineering, Computer Science	
Date determined	**Course level**	**Progressive specialisation**
2025-08-28	First cycle	G2F
Revised by	**Disciplinary domain**	
	Technology	
Revision date	**Subject group**	
	Computer Technology	
Offered first time	**Offered for the last time**	
Spring semester 2026		
Department	**Replaced by**	
Institutionen för datavetenskap		

Course offered for

- Master of Science in Computer Science and Engineering

Prerequisites

Mathematical analysis, linear algebra, statistics, programming in Python.

Intended learning outcomes

The overall aim of the course is to provide an introduction to machine learning with a focus on implementing and using models based on neural networks. The course will provide skills in implementing basic deep learning models in a dedicated software library.

After completion of the course, the student should be able to:

1. Use basic concepts and methods in machine learning to formulate, structure, and solve practical problems.

2. Construct basic models for classification and regression.

3. Implement basic neural network-based machine learning models in Python using a deep learning framework and fit these to training data.

4. Use pre-trained machine learning models and analyze their performance.

Course content

This course offers a gentle introduction to machine learning with a focus on implementing and using models based on neural networks. This includes: unsupervised and supervised learning; regression and classification; model training, selection, and evaluation; neural networks; convolutional neural network; deep learning; machine learning operations; application of the methods to real data. The course will provide skills in implementing basic deep learning models in a dedicated software environment, including support for GPU acceleration and automatic di��erentiation, which are central features for practical implementation of deep neural networks.

Teaching and working methods

The teaching consists of lectures and computer labs. Lectures are used to introduce basic concepts and theory that the students then use in practical problem solving within the computer labs. The computer labs also introduce the students to a deep learning framework (e.g., PyTorch).

Examination

LAB1	Laboratory work	2 credits	U, G

LAB1 consists of laboratory assignments that test the students' ability to solve practical machine learning problems.

Grade for examination module is decided in accordance with the assessment criteria presented at the start of the course.

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

Grades

Two-grade scale, U, G