T-61.3050 Machine Learning: Basic Principles (5 cr)

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The topics of the course include the background principles needed to understand and apply the models of machine learning. After the course, the student is able to (i) apply the basic methods to real world data, (ii) understand the basic principles of the methods and (iii) understand and apply new concepts and methods that build on the topics covered in the course.

Machine learning is programming computers to learn or optimize a performance criterion using example data or past experience. Machine learning is closely related to data mining and statistics, and also to the theoretical computer science, especially analysis of algorithms.

Machine learning comes into play when computers have to deal with natural or otherwise "noisy" data. The course covers the principles of probabilistic modeling, as well as algorithmic considerations, in data analysis. The course introduces some basic machine learning methods that can be used in classification, regression and unsupervised learning, as well as hands-on applications of these methods and principles in real data analysis examples.

About the course

Lectures: Tuesdays at 10−12 (from 11 September to 11 December 2007).
Problem sessions: Fridays at 10−12.
Requirements: Examination and exercise work.
Prerequisites: Basic mathematics and probability courses, basics of programming, data structures and algorithms.
Literature: Alpaydin, 2004. Introduction to Machine Learning. The MIT Press. Lecture notes.
Language: English.

The lectures and problem sessions take place in the lecture hall T1 of the TKK Computer Science Building (Konemiehentie 2, Espoo). The first lecture will begin on **11 September 2007** at 10 o'clock.

See the course homepage for further information.