T-61.6020 Machine Learning: Basic Principles (5 cr) V P

Briefly: The seminar course will provide a comprehensive introduction
to the fields of pattern recognition and machine learning. The course
follows the new text book by C.M. Bishop, "Pattern Recognition and
Machine Learning" (2006).

The first lecture will take place in lecture hall T4 on 15 January
2007 at 14 o'clock.

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T-61.6020 Machine Learning: Basic Principles (5 cr) V P
T-61.6020 Machine Learning: Basic Principles (5 op) V L

Spring 2007

26+0 (2+0)

Kai Puolamäki, PhD, lecturer
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Website: http://www.cis.hut.fi/Opinnot/T-61.6020/
Email: t616020@james.hut.fi
Lectures: In T4 on Mondays at 14–16 o'clock (15.1.–30.4.2007).
Requirements: Seminar presentations, exercise works, active
              participation.
Prerequisites: First two years' mathematics courses.
Language: English, if someone _at the beginning of the first lecture_
          (on 15 January 2007 at 14:15 o'clock) does not understand
          Finnish; otherwise Finnish.

The lectures are held in lecture hall T4 of the Computer Science
Building (Konemiehentie 2, Espoo) of the Helsinki University of
Technology. The course will take place in periods III–IV/2006–2007
(from 15 January to 30 April 2007).

Course description:

The seminar course will provide a comprehensive introduction to the
fields of pattern recognition and machine learning. The course is
especially suitable for advanced undergraduates and PhD students who
want to have (or refresh) a comprehensive and solid overview of these
fields.

This course is organized partly in preparation for a new lecture
course, to be lectured yearly beginning autumn 2007.

The course will follow the new text book
  Bishop CM (2006) Pattern Recognition and Machine Learning. Springer,
  New York.
The book is available from the HUT library and it has a web site at
http://research.microsoft.com/~cmbishop/PRML/
The titles of the chapters (and thus overview of the course contents)
read as follows:
 1. Introduction
 2. Probability Distributions
 3. Linear Models for Regression
 4. Linear Models for Classification
 5. Neural Networks
 6. Kernel Methods
 7. Sparse Kernel Machines
 8. Graphical Models
 9. Mixture Models and EM
 10. Approximate Inference
 11. Sampling Methods

12. Continuous Latent Variables
 13. Sequential Data
 14. Combining Models

The course requirements include one or more (depending on the number
of participants) seminar presentations, solving given exercise
problems and active participation. Detailed requirements will be
announced during the first lecture on 15 January 2007.

Tentative timetable:
15 Jan   Introductory lecture, organization of the course.
From 22 Jan to 30 Apr   Seminar presentations.

Please sign in using WebTOPI at https://webtopi.tkk.fi/

You can find more information from the course web site at
http://www.cis.hut.fi/Opinnot/T-61.6020/

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