FDD3364 Elements of Statistical Learning 9.0 credits

Statistisk inlärning

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for FDD3364 valid from Spring 2012

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After successfully taking this course you will

- have a thorough overview and understanding - from derivation to implementation - of many of the established statistical supervised machine learning techniques (see course textbook for an overview),

- be able to apply and adjust a relevant subset of the techniques to your particular research problems,
- be able to describe a learning algorithm in terms of the trade-off it has made with respect to bias and variance,
- be aware of proper training and testing regimes for supervised machine learning problems with limited labelled training data.

Course contents

There will roughly be one lecture per chapter of the course book. However, the following chapters will be omitted Neural Networks, Undirected Graphical Models and Unsupervised Learning as these topics have better coverage in other courses at KTH and in other books such as the Christopher Bishop book Pattern Recognition. Some of the harder and more obscure details within each chapter will also be omitted. Even with these omission the book is still quite long. Therefore, the course will be split into two parts with potentially a break between the scheduling of the two parts. Here is a more detailed description of the content of the two parts of the course.

Course literature

The course will use the book Elements of Statistical Learning (second edition) by Trevor Hastie, Robert Tibshirani and Jerome Friedman, 2009. This is available for download on-line, but it is perhaps recommended that students buy it. Students may also find the book Modern Multivariate Statistical Techniques Regression, Classification, and Manifold Learning by Alan Julian Izenman an insightful companion to the main course book for some of the topics covered. It goes into greater depth on some of the issues.

Examination

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.