Machine Learning - Supervised Learning

Course Description

This course provides a first introduction to the field of machine learning with a focus on supervised learning (i.e., learning from labeled data), where the most commonly used models in regression and classification are being introduced. Moreover, the course provides an introduction to the concepts of large margin classifiers and tree structured models.

Contents

1. Introduction to Machine Learning
   1. Pattern recognition systems
   2. The machine learning design cycle
   3. Technical notions of learning and adaptation
   4. Under- and overfitting
2. Regression
   1. Linear regression
   2. Lasso- and ridge Regularization
   3. Generalized linear models
   4. Logistic regression
3. Basic Classification Techniques
   1. K-nearest neighbour
   2. Naive Bayes
4. Support Vector Machines

4.1 Large margin classification

1. The kernel trick
2. Decision & Regression Trees

5.1 Decision & regression trees

1. Random forest
2. Gradient boosting