Statistical Learning (61208)

Instructors: I. PAPAGEORGIOU

Core Course, 2nd semester, 4 ECTS units
Course level: Graduate (MSc)
Language: English

Course Description

A range of statistical learning methods is studies. For supervised learning and classification problem: Methods of Linear Discriminant Analysis (LDA), Quadratic Discriminant Analysis (QDA), k-nn and decision trees. For unsupervised learning: clustering (hierarchical, optimization clustering, model-based), data reduction methods. Model Assessment and Selection.

Prerequisites
Multivariate Analysis, Statistical Inference.

Target Learning Outcomes
Upon completion of the course, students will have the knowledge and the skills to implement statistical methods aiming to deal with the problem of data dimension reduction, classification and clustering. They will be able to interpret the results and assess the methodologies' performance.

Recommended Bibliography
- Hastie, Tibshirani and Friedman (2009) Elements of Statistical Learning, 2nd edition Springer
- James, Witten, Hastie and Tibshirani (2011) Introduction to Statistical Learning with applications in R, Springer
- B. S. Everitt, S. Landau, M. Leese, and D. Stahl (2011) Cluster Analysis, Fifth Edition, Wiley

Teaching and Learning Activities
Face to face teaching covering theory and practice. The practicals are implemented with R.

Assessment and Grading Methods
Written exam and projects.