Syllabus

Data Analysis 4: Prediction and Intro to Machine Learning

- **Instructor:** Gábor Békés (bekesg@ceu.edu office hours: Thursdays 16-17.15 by appointment)
- **Credits:** 2 (4 ECTS)
- **Term:** Winter 2017-2018
- **Course level:** [MA/MSc]
- **Prerequisites:** Data Analysis 1,2,3 (or Introductory Econometrics)

Course description

Data Analysis 4 covers the fundamentals of statistical prediction and predictive analytics. This course equips students with the knowledge and skills necessary to carry out and evaluate predictions in business and policy environments. Similar to Data Analysis 3 we focus on the most robust, credible and transparent methods, and we emphasize correct interpretation and convincing presentation. This course starts with the fundamentals of predictive analytics and covers topics such as prediction from regressions, tree-based models (regression and classification trees to random forest), time series forecasting models and unsupervised learning algorithms.

Learning outcomes

- By successfully completing the course the students will be able to:
- - Carry out reasonably good predictions and evaluate their performance;
- - Evaluate the predictive performance of all kinds of models;
- - Discuss and evaluate results of predictive analysis.
- - Present the results of predictive analytics and write short reports;
- - Evaluate the merits of presentations and reports that carry out predictive analytics.

Reading list

Data, codes and handouts will be provided.

Assessment

- Start-of-the-class Quizzes (10%)
- 3-4 Assignments (40%)
- Closed book exam (50%)

Grading policy

- Students shall not miss more than 2 lectures and more than 1 seminar. Failing to do so will yield an administrative fail grade.
- To pass, students will need to get at least 50% of the overall grade AND at least 50% of the exam. Failure to do so, will yield a Fail grade.

Course schedule and materials for each session