

Statistical Learning Methods [223490-0286], spring 2017/18

Lectures

Teachers:

- Bogumił Kamiński lectures
- Artur Płuska, Michał Kot, Beata Koń laboratories

Schedule:

- Lectures: Aula Główna (Tuesdays, 8:00), except on days 16-05-18 23-05-18: Aula III, 16:15
- Laboratories: B-12 (Tuesdays, 17:10), A-113 (Tuesdays, 17:10 and Wednesdays, 16:15)

Lectures

Date	Subject
27-02-18	Essential data science skills: managing your code and analytical project workflow
06-03-18	Introduction to statistical learning
13-03-18	Fundamentals of prediction modeling
20-03-18	Methods of evaluation of classifier quality
27-03-18	Advanced methods of building of stable prediction models
03-04-18	Methods of selection of form of forecasting model specification; Nonparametric regression models
17-04-18	Classical machine learning models: CART and ANN; Unsupervised learning
24-04-18	Causal inference: introduction
08-05-18	Causal inference: algorithms
15-05-18	A study of network-based models with a focus on the transportation and distribution problem
16-05-18	A study of network-design models with a focus on facility location
22-05-18	An application of network design principles using a large scale optimization tool (1)
23-05-18	An application of network design principles using a large scale optimization tool (2)
29-05-18	Production deployment of R code with RSuite
05-06-18	Methods of time series forecasting + written examination

Laboratories

Lab #	Subject
1	Introduction to R programming. Logistic regression. R extensions: shiny, plotly
2	Methods of evaluation of classifiers. Nonparametric regression models: smoothing spline
3	Nonparametric regression models: LOESS, GAM. Classification competition
4	Classical machine learning models: CART, ctree, random forest. Extensions: extraTrees and XGBoost. Neural networks: nnet
5	Deep learning: MXnet. Computer examination

Textbooks

- Gareth J., Witten D., Hastie T., Tibshirani R. (2013), An Introduction to Statistical Learning with Applications in R (<http://www-bcf.usc.edu/~gareth/ISL/>)
- Hastie T., Tibshirani R., Friedman J. (2013), The Elements of Statistical Learning (<http://www-stat.stanford.edu/~tibs/ElemStatLearn/>)
- Optionally (in Polish): Kamiński B., Zawisza M. (2012), Receptury w R. Podręcznik dla ekonomisty, Oficyna Wydawnicza SGH (<http://bogumilkaminski.pl/projekty/>)

Grading rules

Elements of grade:

- Written examination (maximally 50 points):
 - During last lecture
 - It is allowed to have textbooks
- Practical examination (maximally 50 points):
 - During last laboratory, R code writing test at the computer
 - It is allowed to have textbooks

Rules for final grade calculation:

Number of points		Final grade
Od	Do	
0	49	2.0
50	59	3.0
60	69	3.5
70	79	4.0
80	89	4.5
90	100	5.0