

- Faculté des sciences
- www.unine.ch/sciences

Statistical Learning Methods (3IN2046)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Master en informatique	Cours: 2 ph Exercice: 2 ph	Voir ci-dessous	5
Master en statistique	Cours: 2 ph Exercice: 2 ph	Voir ci-dessous	5

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Automne

Equipe enseignante

Prof. Jacques Savoy

Objectifs

The main objectives of this course is to introduce the students to the various techniques coming mainly for the statistical domain in the machine learning paradigm. The main objectives of the course are the followings:

- 1) to be able to use and program in R, the statistical language (used to analyze Big Data);
- 2) to select, apply and evaluate a learning method using R and to interpret the results;
- 3) to select the most appropriate method according to the data, and to evaluate the quality of the fit.

Contenu

Introduction to R (statistical software); statistical models and evaluation with R; regression simple and multiple; logistic regression; k-nearest neighbors; linear discriminant analysis (LDA); model evaluation, variable selection and regularization; resampling approaches & evaluation; support vector machines (SVM); boosting; unsupervised approaches (principal component analysis, multidimensional scaling);

Forme de l'évaluation

Written 2 hours + Practical exercices

Documentation

Copies of the slides will be available

References:

G. Jones, D. Witten, T. Hasti, R. Tibshirani: An Introduction to Statistical Learning. With Applications in R. Springer, 2013.

C.M. Bishop: Pattern Recognition & Machine Learning. Springer, 2006.

T. Hasti, R. Tibshirani, J. Friedman: The Elements of Statistical Learning. 2nd Ed. Springer, 2009.

M.J. Crawley: The R Book. 2nd Ed., Wiley, 2012

Pré-requis

Bachelor in Computer Science

Forme de l'enseignement

+ 2 hours of practical exercices (with R)

URLs	1) http://mcs.unibnf.ch/program/courses-timetable/courses/statistical-learning-methods
------	--