Statistical learning

ECTS : 4

Volume horaire : 39

Description du contenu de l'enseignement :

- 1 Examples and machine learning framework: applications, supervised and non-supervised learning
- 2 Useful theoretical objects: predictors, loss functions, bias, variance
- 3 K-nearest neighbors (k-NN); Higher dimensions and Curse of dimensionality
- 4 Regularization in high dimensions: ridge and lasso (for linear and logistic models)
- 5 Stochastic Optimization Algorithms used in machine learning: Stochastic Gradient Descent, Momentum, Adam, RMSProp
- 6 Naive Bayesian classification
- 7 Deep learning through neural networks : introduction, theoretical properties, practical implementations (Tensorflow, PyTorch depending on acumen)
- 8 Generative and non-supervised learning: k-means

Compétence à acquérir :

Introduction to statistical learning, particularly in a high-dimensional context, including baseline algorithms (k-NN, ...) and modern approaches in deep learning (neural networks).

Mode de contrôle des connaissances :

cf. CC

Bibliographie, lectures recommandées :

See site of the course (site of the teacher); also see textbook by G. Turinici (cf. Amazon)

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