

Machine Learning in finance

ECTS : 6

Volume horaire : 21

Description du contenu de l'enseignement :

- Introduction to statistical learning: The Vapnik Chervonenkis dimension, PAC learning and the calibration versus prediction paradigm.
- Supervised learning: SVM, Mercer's theorem and the kernel trick, C-SVMs, mu-SVMs, a few words on SVMs for regressions.
- Unsupervised learning: Single class SVMs, clustering, anomaly detection, equivalence of different approaches via duality.
- Introduction to random forests and ensemble methods: bias variance tradeoff, bootstrap method
- A few words on neural networks: backpropagation, deep learning.
- Remarks on parsimony and penalisation : Ridge and Lasso regressions, dual interpretation of Lasso.

Compétence à acquérir :

Some Statistical Learning results are presented and applied to credit rating, anomalies detection and yield curves modeling. The principal notions are presented in the context of these case studies in finance.

Mode de contrôle des connaissances :

Final exam

Bibliographie, lectures recommandées :

https://web.stanford.edu/~hastie/ISLR2/ISLRv2_website.pdf