Machine Learning in Finance

ECTS : 3

Description du contenu de l'enseignement :

The objective of the course is to provide students with an introduction to supervised machine learning and its applications to finance. At the end of the course, students will be able to implement a whole machine learning pipeline in Python. From key features (data cleaning, cross-validation..) to machine learning models implementation (linear regression, tree-based techniques, neural networks...). Live-coding and practicing also are main features of the course. Students will be asked for multiple hours labs and a machine learning competition evaluation. Course outline: Session 1: Machine learning in finance. Session 2: Linear and Logistic regressions. Session 3 : Machine learning in practice. Labclass 1: Financial news impact on Dow Jones index. Session 4: Tree-based methods. Session 5: Feedforward neural networks. Labclass 2: Machine learning competition.

Compétence à acquérir :

Be able to implement a whole machine learning pipeline in Python. From key features (data cleaning, cross-validation..) to machine learning models implementation (linear regression, tree-based techniques, neural networks...).

Mode de contrôle des connaissances :

Machine learning competition (50%), final evaluation (50%).

Bibliographie, lectures recommandées :

Trevor Hastie, Robert Tibshirani, Jérôme Friedman (2009), The elements of statistical learning, (Springer). Tuffery S. (2011), Data mining and statistics for decision making, (Wiley). Hinton Geoffrey (2014), Neural networks for machine learning, Toronto University. Ng Andrew (2014), Machine Learning, Stanford University.

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