Python for finance (Bloc 1/3 of the Certificate "Fundamentals of Data Science")

ECTS : 0

Description du contenu de l'enseignement :

Our aim in this course is to implement some key concepts in quantitative finance using popular Python packages such as :

- NumPy : the fundamental package for scientific computing.
- Matplotlib : the main 2D plotting library.
- SciPy : another scientific computing library containing toolboxes dedicated to optimization, statistics and many other fields.
- Pandas : A library offering powerful data structures and tools for data analysis.

The data we will use is extracted from free online sources (Google, Yahoo, ...). The main parts of the course are the following :

1. Python basics : Data types, data structures, programs structure and packages.

2. Numpy, Matplotlib : discovering these packages with application to Monte Carlo simulation (look at the potential evolution of asset prices over time/Random walk).

3. Scipy : Introduction and application to a regression analysis of stock prices.

4. Pandas and Matplotlib. Introduction and Application (I) : importing, visualizing and analysing Time series financial data.

5. Pandas and Matplotlib. Advanced aspects and application (II) : Volatility calculation, Algorithmic trading, Creating, testing and improving a trading strategy.

Compétence à acquérir :

Mastering the structure of the Python language, a good knowledge of the most important libraries for financial applications (Numpy, Matlplotlib, Scipy, Pandas).

Mode de contrôle des connaissances :

Several programming assignments (one for each class).