Universidad de Navarra

Machine Learning for Asset Valuation

Guía docente 2024-25

PRESENTACIÓN

Breve descripción: The course is composed of two modules:

Module 1: The objective is to teach students Python and use cases for finance. The course does not assume any previous knowledge of Python or coding.

Module 2: The objective is to teach students the main Machine Learning Techniques. The focus of the course is on practicalities of Machine Learning in Finance. After completion of the course the students will know the main models and algorithms from such areas of Machine Learning as Supervised/Unsupervised Learning and Reinforcement Learning. The examples are provided in Python code using Jupyter Notebooks. The course is designed by practitioners. Basic level of programming in Python is required as well as basic level math in such areas as Linear Algebra, Statistics, Theory of Probabilities and Optimization.

- **Titulación**: Degree in Management with Specialization in Finance and Accounting
- **Módulo/Materia**: Optativas, Optativas específicas del perfil Finance and Accounting
- **ECTS**: 3
- **Curso, semestre**: Second year, First semester
- **Carácter**: Mandatory for Finance and Accounting students
- **Profesorado**: José Azar (jazar@unav.es)
- **Idioma**: English
- **Aula, Horario**: TBD

RESULTADOS DE APRENDIZAJE (Competencias)

SSOP22: Know about and manage advanced tools and techniques to value financial assets

SSOP23: Gain an in-depth knowledge of the workings of financial markets

PROGRAMA

Topic 1: Introduction to Python

Topic 2: Data analysis in Python

Topic 3: Analysis of financial data

Topic 4: Financial market case study

Topic 5: From statistics to supervised Machine Learning

Topic 6: Ensemble and Deep Learning

Topic 7: Unsupervised Machine Learning with use cases from Finance

ACTIVIDADES FORMATIVAS

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Problem Sets

Group Project

EVALUACIÓN

CONVOCATORIA ORDINARIA

- Problem Sets 40%
- Group Project 40%
- Class Participation 20%

CONVOCATORIA EXTRAORDINARIA

- Final Exam 100%

HORARIOS DE ATENCIÓN

José Azar.....(jazar@unav.es)

- Despacho.....2210 Edificio Amigos. Planta 2
- Horario de tutoria: TBD

BIBLIOGRAFÍA

Introduction to Python

– Introducing Python: Modern Computing in Simple Packages - Bill Lubanovic (O'Reilly)

• https://www.amazon.co.uk/Introducing-Python-Modern-Computing-Packages/dp/1449359361

• Data analysis in Python

– Python for Data Analysis - Wes McKinney (O'Reilly)

• https://www.amazon.co.uk/Python-Data-Analysis-Wes-Mckinney/dp/1491957662/

• Analysis of financial data

– Trading Thalesians - Saeed Amen (Palgrave Macmillan)

• https://www.amazon.co.uk/Trading-Thalesians-Ancient-World-Teach/dp/113739952X/

– Python for Finance - Yves Hilpisch (O'Reilly)

• https://www.amazon.co.uk/Python-Finance-Mastering-Data-Driven/dp/1492024333/

• Financial market case studies using Python

– The Art of Currency Trading: A professional's guide to the foreign exchange market

• https://www.amazon.co.uk/Art-Currency-Trading-Professionals-Exchange/dp/1119583551