

NOVA

IMS

Information
Management
School

0

COURSE OVERVIEW

Machine Learning for Marketing

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Acreditações e Certificações



Instituto Superior de Estatística e Gestão da Informação
Universidade Nova de Lisboa

Theory classes + Course coordination

HELLO!

Nuno António



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Practical classes



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Intended learning outcomes

- LO1. Understand Machine Learning fundamentals
- LO2. Recognize and identify Machine Learning tools and applications in marketing
- LO3. Understand the Machine Learning project lifecycle
- LO4. Identify and know how the main algorithm families' work
- LO5. Identify and know the key performance measures used in Machine Learning models
- LO6. Know how to apply key the different algorithms in marketing cases using Python

Tentative schedule

**16 FEB
Theory**

Course
overview
Introduction
to ML
CRISP-DM

**23 FEB
Theory**

Data
understand.
+ Prep.
Project 1
Model
validation

**02 MAR
Theory**

Modeling:
Regression

**09 MAR
Practice**

Data
understand.
Data
preparation
Modeling:
Regression

**16 MAR
Practice**

Modeling:
Regression

**23 MAR
Theory**

Project 2
Modeling:
Classification

**30 MAR
Theory**

Modeling:
Classification
(cont.)

**20 APR
Practice**

Modeling:
Classification

**27 APR
Theory**

Ensembles of
methods
Models'
interpreta.

**04 MAY
Theory**

Project 3
Clustering
Evaluation &
Deployment

**11 MAY
Practice**

Modeling:
Classification
(cont.)

**18 MAY
Practice**

Modeling:
Clustering

**25 MAY
Practice**

Evaluation &
Deployment
Project 3
Q&A

**01 JUN
Practice**

Projects
discussion

Extra classes – Tentative schedule

- Saturday, 25 Feb. 14h30 – 18h30 (hybrid)
 - Python Bootcamp 1/2
- Saturday, 04 Mar. 14h30 – 18h30 (hybrid)
 - Python Bootcamp 2/2

B

Python Bootcamp

[Slides B - Python Bootcamp](#)[Python Bootcamp participation survey](#)

Python setup

- The easiest way to install Python for Data Science is using the Data Science package manager **Anaconda**
- **Anaconda** installs not only Python, but also the main Data Science packages, source code editors, and other tools
- **Anaconda** can be freely downloaded from <https://www.anaconda.com/products/individual>
- However, if you prefer to install every component individually, you can install Python from <https://www.python.org>
- Python courses (for students not familiar with Python):
 - Enroll for free on Datacamp (use the link https://www.datacamp.com/groups/shared_links/7bee9ccc54428b4df6fe543f13eba171016e1a84839a81e3b051f9b908bbb908 and your NOVA IMS email)
 - On Datacamp conclude the courses: Introduction to Python, Intermediate Python, and Data manipulation with Pandas

Pedagogical model Spring 2023

For now, all classes will hybrid (presential and online):

- In presential classes:

- A minimum of 5 students is required
- If the minimum is not reached in one class, the class goes to fully online mode after that class

- In online classes:

- Students should have their webcams turned on or could be moved to the Zoom “waiting room”
- As the classes will have a high practical component, it is recommended to use two screens or a large screen (one for zoom, one for running the exercises)

Evaluation method

Project 1 - Regression	20%
Project 2 - Classification	20%
Project 3 - Clustering	20%
Exam (1 st season and 2 nd season have the same weight) a minimum grade of 8.0 is required to pass the course	40%
TOTAL	100%

Evaluation will be continuous and includes practical components. Therefore, there will be no exam that alone corresponds to 100% of the grade

Group projects

- **Objective:** To develop student's ability to build a Machine Learning project employing the CRISP-DM process model
- **Details:** Available on the respective notebook
- **Organization:** groups of 4 or 5 students
- **Deliverables:** Python source code (Jupyter notebooks or .py files). Code should be commented to facilitate comprehension

Exam details

- Individual, with materials consultation
- Whether taken in person or remotely, exams are made online, in Moodle
- If done remotely, uses proctoring software (Respondus Lockdown browser)
- Multiple choice questions:
 - Single answer questions (e.g., 1 point – 4 possible answers):
 - Correct answer: full score of the question (e.g., 1 point)
 - Incorrect answer: negative (-1/possible answers- e.g., $-1/4 = -0.25$)
 - Multiple answers questions:
 - Each correct answer: number correct questions/full score of the question
 - Each incorrect answer: -number correct questions/full score of the question
 - If no answer is given or if “I do not want to answer” is selected, the score will be 0 (zero)
- Typically, an exam has 40 to 50 questions. The time to answer each question is 1 min. 30 sec.

Bibliography

- [A] Ng, Andrew (2017). Machine Learning Yearning. Retrieved from <https://www.deeplearning.ai/machine-learning-yearning/>
- [B] Abbott, D. (2014). Applied Predictive Analytics: Principles and Techniques for the Professional Data Analyst. Indianapolis, IN: Wiley: Available at the Nova IMS VPN: <http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=752690>
- [C] Kelleher, J. D., Namee, Brian, M., D'Arcy, A. (2015). Fundamentals of machine learning for predictive data analytics: Algorithms, Worked Examples, and Case Studies. Cambridge, MA: The MIT Press
- [D] Miller, T. W. (2015). Marketing Data Science: Modeling Techniques in Predictive Analytics with R and Python. USA: Pearson Education Ltd.
- [E] Artun, O., and Levin, D. (2015). Predictive Marketing: Easy ways every marketer can use customer analytics and big data. Hoboken, NJ: Wiley
- [F] Hastie, T., Tibshirani, R., Friedman, J. (2001). *The Elements of Statistical Learning*. New York, NY, USA: Springer New York Inc..
- [G] Materials and references URLs provided in class by the instructor

Communications

- Course instructor to students – materials and logistics:
 - Announcements via Moodle (with email sent)
 - Moodle: publication of course materials
- Students to course instructors – questions – by priority order:
 - Check course materials
 - Post a question in Moodle (Forum) – anyone can post and answer/help
 - Email
 - Meeting (available Mondays or Wednesdays, 18h30-20h) (requires scheduling by email)
- Submissions (project deliverables, groups memberships):
 - Must be made via Moodle in the appropriate slots
 - Must be made before the deadlines – points deducted if not on time

Questions?

Machine Learning For Marketing

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Acreditações e Certificações



UNICIS



A3ES



Double Degree
Master Course in
Information Systems
Management



eduniversal



Computing
Accreditation
Commission



Instituto Superior de Estatística e Gestão da Informação
Universidade Nova de Lisboa