0IBUSX13 - Data Science for Marketing Analytics

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Department: International affairs
Semester: 1

Course level: L3 Undergraduate
Domain: Business & Management
Teaching language: English
Number of in-class hours: 33
Number of course sessions: 10 + Exam
ECTS: 6

Course description and objectives

“Data-driven marketing is the next normal” McKinsey claimed in 2021. From customer segmentation to the analysis of the effects of a marketing campaign, all the way to sentiment analysis on consumer reviews, data can be leveraged in every step of a marketing strategy. But while the use cases for data in marketing are numerous, and the potential for increased value exponential, the challenges faced by the data-driven marketer are also plenty : collecting quality data, cleaning, analyzing and processing those data sources, identifying a machine learning strategy to solve a specific issue, productionizing a data-driven marketing product, etc. This course will provide future young professionals with the tools and mindset to approach any data science problem, and autonomously design and implement an end-to-end project based on marketing data.

Prerequisites

No prerequisites

Learning outcomes

- Understand the principles and the value proposition of data science in the context of marketing, including data preparation, data visualization, and exploratory data analysis techniques to make informed decisions.
- Implement and evaluate machine learning models, including classification, regression, and clustering algorithms, and apply these models in marketing contexts.
- Autonomously build a data science prototype to solve a marketing issue.

Assignments and grading

- In-class assignments 50%
- Final exam 50%

The numerical grade distribution will dictate the final grade. The passing grade for a course is 10/20.

Class participation: Active class participation – this is what makes classes lively and instructive. Come on time and prepared. Class participation is based on quality of comments, not quantity.
Exam policy: In the exam, students will not be allowed to bring any document (except if allowed by the lecturer). Unexcused absences from exams or failure to submit cases will result in zero grades in the calculation of numerical averages. Exams are collected at the end of examination periods.

Course structure

Session	Topic
1	Introduction to data science in marketing (what is data science)
2	Data preparation and visualization (joining datasets, computing aggregations, data cleaning)
3	Exploratory data analysis (data exploration, data visualisation)
4	Fundamentals of Machine Learning (supervised and unsupervised learning, train-test split, preparing data for machine learning)
5	Classification algorithms - Customer churn detection (deep dive: logistic regression, deep dive : decision tree and random forest, classification metrics, project : Detect customer churn)
6	Regression algorithms - Predict customer satisfaction score (deep dive : linear regression, regression metrics, project: predict customer revenue)
7	Project : Customer lifetime value
8	Clustering algorithms - Customer segmentation (deep dive : K-Means, hierarchical clustering, clustering metrics, project : customer segmentation)
9	Natural language processing - Sentiment analysis on customer reviews (introduction to NLP, sentiment analysis)
10	Productionizing a data science project (deploy a prediction model as an API endpoint, integration with a webapp)
11	**Project Presentation**

Bibliography

No bibliography

Moodle

This course is on Moodle.

Academic integrity

Be aware of the rules in Université Paris Dauphine about plagiarism and cheating during exams. All work turned in for this course must be your own work, or that of your own group. Working as part of a group implies that you are an active participant and fully contributed to the output produced by that group.