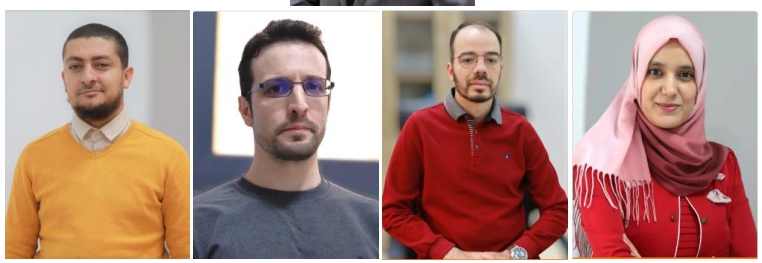
Machine Learning syllabus

Pr. Ahmed Guessoum and Dr. Mohammed Brahimi

Outline

Machine learning Team

- Lecturers
  - Pr. Ahmed Guessoum
  - Dr. Mohammed Brahimi
- Tutorial instructors
  - Dr. Mohamed Hadj Ameur
  - Dr. Mohammed Brahimi
- Lab instructors
  - Dr. Aicha Boutorh
  - Dr. Seif Eddine Bouzian



Course Goals

- **Foundations**: Introduction to fundamental machine learning algorithms and their underlying principles.
- **Alternative Techniques**: Exploration of alternatives to the basic machine learning algorithms.
- **Algorithm Validation**: Equip students with robust validation techniques for machine learning algorithms to prevent erroneous conclusions.
- **Applied Learning**: Focus on the practical application and implementation of machine learning in real-world scenarios.

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Course Prerequisites

- **Mathematics**: Linear Algebra, Calculus, Probability, Statistics.
- **Programming**: Proficiency in Python/R or similar.
- **Data Handling**: Experience with data manipulation and analysis tools.
- **Algorithms**: Basics of algorithms, computational complexity.
- **Analytical Skills**: Critical thinking, logical problem-solving.

Course content

- **INTRODUCTION (1 lecture, 4%)**
  - Introduction to Machine Learning
- **PREDICTIVE DATA ANALYTICS (19 lectures, 73%)**
  - Information-Based Learning
  - Similarity-Based Learning
  - Probability-Based Learning
  - Error-Based Learning
  - Deep Learning
  - Evaluation
- **BEYOND PREDICTION (4 lectures, 15%)**
  - Semi-supervised Learning
  - Active learning
  - Reinforcement Learning
- **CASE STUDIES AND CONCLUSIONS (2 lectures, 8%)**

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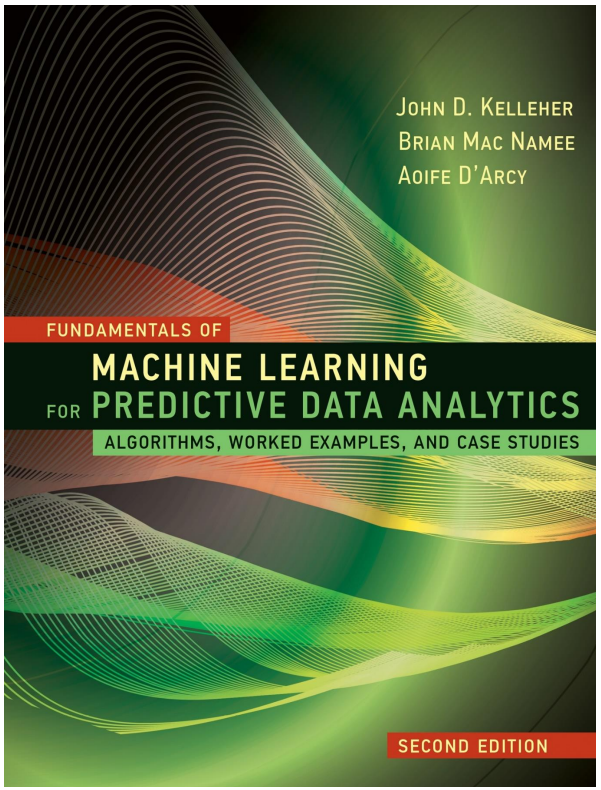
Assessment method

- Final Exam - 60%
- Continuous Evaluation - 40%
  - Midterm - 20%
  - Machine learning project - 15%
  - Quizzes - 5%

Textbooks

The main textbook: **Fundamentals of Machine Learning for Predictive Data Analytics.**



Other textbooks

These textbooks can serve as additional resources to deepen your comprehension of machine learning.