

Machine Learning

Prepared by Dr. Yasser Abdelhamid

DS 620
Machine Learning

Lecture 0



Course Outline

- This course gives the student a broad introduction to supervised machine learning.
- The course covers topics in
 - regression,
 - classification,
 - neural networks,
 - ensemble methods and,
 - a brief introduction to deep learning and reinforcement learning.
- The course introduces examples from practical applications to demonstrate how to create learning and adaptable systems.

Learning Outcomes

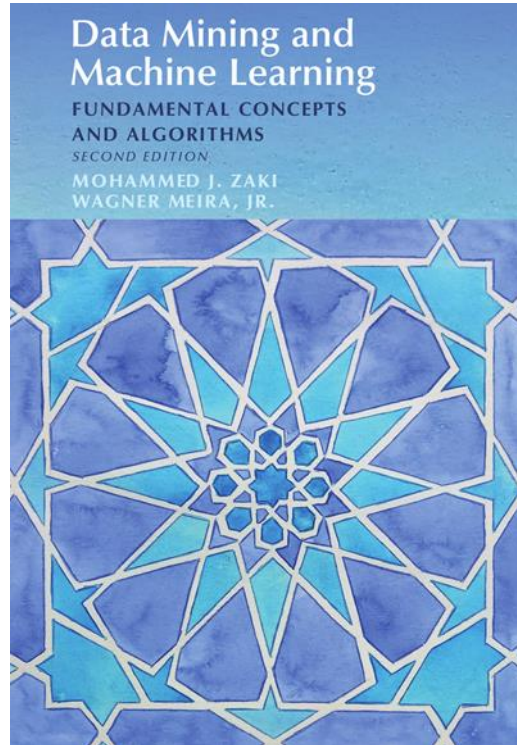
Upon completion of this course, the student will be able to:

- Understand the advantages and disadvantages of the most widely used machine learning techniques.
- Identify the underlying problems and difficulties that machine learning process faces, such as data quality, model choice, model complexity, etc.
- Create and refine supervised machine learning models for binary classification and prediction problems, such as logistic regression.
- The ability to create and use a variety of machine learning algorithms in a variety of practical situations.
- Utilize the well-known machine learning packages NumPy and scikit-learn to create machine learning models in Python.

Week	Topics
1	Orientation week
2	Introduction to Machine Learning
3	Regression
4	K-Nearest Neighbors (KNN)
5	Logistic Regression
6	Perceptron
7	Support Vector Machines (SVM)
8	Naive Bayes
9	Decision Tree classifier
10	Ensemble Learning
11	Variance vs bias trade off
12	Revision
13	Final Exams



Course Plan



Reference

Data Mining and Machine Learning: Fundamental Concepts and Algorithms, Mohammed J. Zaki and Wagner Meira, Cambridge University Press, 2020.

Tuesday, 9:00pm – 10:30pm

OFFICE HOURS



Office Hours

❖ 80 Marks

- 10 weekly short exams
- 8 Marks for each Exam.

❖ 20 Marks

- Final Examination



Assessment



Thank You

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