

AI and Machine Learning

Course Introduction

Prof. Gheith Abandah

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Outline

- Course Information
- Video: Machine Learning & Artificial Intelligence
- Textbook and References
- Course Objectives and Outcomes
- Course Topics
- Policies
- Grading
- Important Dates
- Video: What is Machine Learning?

Course Information

- **Instructor:** Prof. Gheith Abandah
- **Email:** abandah@ju.edu.jo
- **Office:** CPE 406
- **Home page:** <http://www.abandah.com/gheith>
- **MS Team:** [Link](#)
- **Office hours:** Sun – Thu: 8:30 – 14:00

Machine Learning & Artificial Intelligence

- YouTube Video from CrashCourse

<https://youtu.be/z-EtmaFJieY>

Textbook and References

- **Textbooks:**

1. Aurélien Géron, Hands-On Machine Learning with Scikit-Learn, Keras and TensorFlow: Concepts: Tools, and Techniques to Build Intelligent Systems, 2nd Edition, O'Reilly Media, Oct 2019.
2. Prateek Joshi, Artificial Intelligence with Python, Packt Publishing, 2017.

- **References:**

1. François Chollet, Deep Learning with Python, Manning Pub. 2018.
2. Theodoridis S, Koutroumbas K, Pattern Recognition, 3rd ed. Academic Press, 2006.

- **Course web page:** http://www.abandah.com/gheith/?page_id=2836

Course Objectives

- Introduce students to the techniques used in ML including data preparation, training models, classification, neural networks, and deep learning.
- Introduce students to the practical techniques used in developing ML systems including sample collection, training, and evaluation.
- Introduce students to the programming techniques and libraries used in ML (Python, Scikit-Learn, Keras, and TensorFlow).

Course Outcomes

- Solve an AI problem by developing an appropriate ML system.
- Communicate the development of a ML system through a detailed technical report and a short presentation.
- Use Python and its specialized libraries to develop programs for solving ML problems.

Course Outline

- Introduction to AI
- Introduction to ML
- Data preparation and regression
- Classification
- Training models
- Classical techniques: SVM, decision trees and ensembles
- Unsupervised learning and clustering

Midterm Exam

- Neural networks
- Deep neural networks
- Convolutional neural networks
- Recurrent neural networks
- Reinforcement learning
- Recommendation systems

Policies

- Attendance is required
- All submitted work must be yours
- Cheating will not be tolerated
- Open-book exams
- Check department announcements at:
 - <http://www.facebook.com/pages/Computer-Engineering-Department/369639656466107>

Grading

- **Two Quizzes** **10%**
- **Midterm Exam** **30%**
- **Term Project** **10%**
 - To enable the students to get hands-on experience in the design, implementation and evaluation of machine learning systems.
 - Teams: One student
 - Solve a practical machine learning problem of your choice.
 - Use Python.
 - Good projects involve using alternative approaches and evaluating their performance in solving the problem.
- **Final Exam** **50%**

Important Dates

Mon 28 Feb, 2022	Classes Begin
TBA, 2022	Midterm Exam
Wed 4 May, 2022	Term project proposal is due
Wed 1 Jun, 2022	Term project report is due
Thu 9 Jun, 2022	Last Date to Withdraw
Wed 8 Jun, 2022	Last Lecture
Jun 11 - 23, 2022	Final Exam Period

What is Machine Learning?

- YouTube Video from Google Cloud

<https://youtu.be/HcqpanDadyQ>