



Machine Learning Beginners Course

بسم الله الرحمن الرحيم

Introduction

Machine Learning Beginner course (MLBC) is a course devoted to beginners in the domain of machine learning, this course will reveal the idea behind machine learning and its philosophy, the types, techniques, and tools to know as newcomers. We'll kick off our Python and machine learning journey with the basic, yet important concepts of machine learning. We will start with what machine learning is about, why we need it. We will then discuss typical machine learning tasks and explore several essential techniques of working with data and working with models. It is a great starting point of the subject and we will learn it in a fun way. At the end of this course a final challenge will have a place to practice what we learned.

Registration

Please note that the places in this course are limited so hurry up and subscribe by providing your information and follow [this](#) link to register into the course.

Prerequisites

- ✓ A Familiarity with programming languages such as Java, C++ or anything is supplementary, we will be using python in this course, for this, we will have a dedicated chapter for python.
- ✓ An intermediate knowledge about portability, calculus, and statistics will help the student to understand deeper things during this class and other courses in machine learning in general, we will make a refresher for such a concept when we need it.
- ✓ A personal computer will help practice and gain instant feedback from the course tutor during the course.

Course Instructor

I'm Younes Charfaoui, a first-year master student in software engineering branch, and I will be the instructor of the **MLBC**, get you pc ready because we will have a lot of fun together. Here are some of my coordinates:

- email: mxcsyounes@gmail.com
- Github: [@github.com/Younes-Charfaoui](https://github.com/Younes-Charfaoui)
- LinkedIn: [@linkedin.com/in/younes-charfaoui/](https://www.linkedin.com/in/younes-charfaoui/)

Educational Objectives

This course will teach you the essence of Machine Learning (**ML**), build ML models, and also learn the techniques and tools which all ML engineers apply in common.

Length of Program Course

The course will be 3 months long. We will start inshallah in the middle of February and complete in the April with the final challenge.

Github Repository

The code of the projects will be developed, datasets and the slides of the course will be found in [this](#) repository, all pull requests, issues or any contributions are welcomed to enhance the program content.

Place & Time

The Date of starting, the time and the classroom will be provided later in the emails of the participants. So, after registering in the form check your emails daily. It will be a 1h (possible to extends to 2h), 1 day in the week (possible to extend to 2 days in a week).

Final challenge

At the end of the course we will have a challenge in which the learner will apply the skills he gets in this course in a real-world dataset, and of course an evaluation will happen to rank the student groups, the first 3 groups will get prizes, don't think about the prizes like a Car or a Bank check with 100 million Dinar !!, the prizes will be just symbolic things to motivate the persons to engage in projects, learn and apply their skills.

Outline

- **Introduction:**

- ❖ Philosophy of AI.
- ❖ What is Machine Learning.
- ❖ Applications of Machine Learning.
- ❖ Types of Machine Learning.

- **Python Refresher:**

- ❖ Python Syntax, variables, control flow, loops and functions.
- ❖ Python libraries and Tools installation.
 - Numpy.
 - Pandas.
 - Matplotlib.
 - Sklearn.

- **Data Preprocessing:**

- ❖ Loading Data
- ❖ Handle Missing Data
- ❖ Encoding Categorical Data
- ❖ Standardization and Normalization.
- ❖ Train/Test Splitting.

- **Supervised Machine Learning:**

- ❖ Classification and Regression Problems.
- ❖ Linear Regression by Hand.
- ❖ Classification with KNN, Decision Trees.
- ❖ Other algorithms (Logistic Regression, Random Forest, Naïve Byes and SVM)

- **Model Evaluations:**

- ❖ Overfitting and underfitting Concepts.
- ❖ Metrics (Accuracy, Confusion Matrix, R2 score, precision and recall).

- **Unsupervised Machine Learning:**

- ❖ Clustering Problem.
- ❖ Clustering with K-Means by Hand.

- **Deep Learning:**

- ❖ Introduction and Concept of Deep Learning
- ❖ First Neural Network.
- ❖ Neural Networks type and Architecture.

Conclusion

The opportunity is here to discover something new, it's free and totally practical, so don't let it go and join us on this wonderful journey in machine learning.

سبحانك اللهم و بحمدك، أشهد ان لا إله إلا أنت استغفرک و اتوب اليك.