

## SYLLABUS OF MACHINE LEARNING WITH PYTHON

### WEEK-1

#### Introduction to Machine Learning

- ✓ Understanding the basic concepts of ML
- ✓ An Introduction to Machine Learning
- ✓ What is Machine Learning?
- ✓ Introduction to Data in Machine Learning
- ✓ Demystifying Machine Learning
- ✓ ML – Applications
- ✓ Review of Linear Algebra
- ✓ Univariate linear regression;
- ✓ Multivariate linear regression.
- ✓ Practical aspects of implementation.

#### Octave/MATLAB Tutorial

With tools and functions for handling machine **learning**, as well as apps to make big data accessible, **MATLAB** is an ideal environment for applying **machine learning** to your data analytics. **MATLAB** provides interactive tools that make it easy to perform a variety of machine learning tasks, including connecting to and importing data. Apps can generate **MATLAB** code, enabling you to automate tasks. Oftentimes, data has missing or incorrect values. Functions for finding, removing, and cleaning data enable you to get your data ready for analysis. Information such as data trends, patterns, and outliers can help us decide which machine learning techniques to apply.

- ❖ Using data visualization tools.
- ❖ you can explore your data.
- ❖ identify key traits.
- ❖ communicate your findings.

### WEEK-2

#### Python for Machine Learning

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- ✓ Introduction to python programming and see how it's works?
- ✓ Python libraries for Machine Learning
- ✓ Create Test Datasets using Sklearn
- ✓ Data Pre-processing in Python
- ✓ Data cleansing
- ✓ Label Encoding of datasets
- ✓ Operators in Python
- ✓ Data Types in Python
- ✓ Looping Constructs
- ✓ Functions in Python

## WEEK-3

### Supervised Learning & Unsupervised Learning

- ✓ getting started with Classification
- ✓ Basic Concept of Classification
- ✓ Types of Regression Techniques
- ✓ Classification vs Regression
- ✓ ML Types of Learning – Supervised Learning
- ✓ Multiclass classification using scikit-learn
- ✓ Gradient Descent For Linear Regression
- ✓ Logistic regression
- ✓ Regularization
- ✓ Support Vector Machines(SVM)
- ✓ Naive Bayes
- ✓ Decision trees
- ✓ Random forest
- ✓ Clustering in Machine Learning basics
- ✓ Gaussian Mixture Model
- ✓ Reinforcement Learning

## WEEK-4

### Decision Trees

- ✓ Basics of Decision Tree
- ✓ Selecting the Best Split Point
- ✓ Building a Decision Tree Model

## Clustering

- ✓ Introduction to Clustering
- ✓ Evaluation Metrics for Clustering.
- ✓ K-means Clustering
- ✓ Analysis of test data using K-Means Clustering in Python
- ✓ Elbow Method for optimal value of k in K-Means

## WEEK-5

### Build Your First Model

- ✓ Introduction and Overview
- ✓ Preparing the Dataset
- ✓ Building a Regression Model
- ✓ Building a Classification Model
- ✓ Overfitting and Underfitting
- ✓ Different Validation Techniques

## WEEK-6

### Final Project

This is final phase of your Internship, and you have to submit a Final Report and the presentation of the project.

## Guidelines

### Read Carefully all these instructions are:

**Weekly Assignments:** You will receive a series of assignments per day that incrementally solve a real-world machine learning problem

**Mentoring:** You can reach out to one of our Machine Learning mentors, in case you face any difficulty at any point in the program.

### Will I be able to download the training content?

Yes, you will be able to download the content.

### What hardware/software are required for doing this training?

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You need to require a computer with a working internet connection (minimum system requirements are 4GB RAM and i3 processor). All the necessary software (if required) are uploaded online which can be downloaded during the training.

**Internship Certificate:** At the end of the internship you will receive an internship completion certificate upon passing a video interview with our faculty and experts.

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