CETPA INFOTECH PVT. LTD.
CURRICULUM OF MACHINE LEARNING

6-weeks

REVISITING PYTHON
- Revisiting Python
- List and dictionary comprehension
- Programming assignment

INTRODUCTION TO MACHINE LEARNING
- What is ML? Why ML?
- Python Libraries for ML
- Types of ML-
  - Introduction to Supervised ML
  - Introduction to Unsupervised ML
  - Introduction to Reinforcement ML

- Mathematical Background for ML-
  - Matrix ops Probability Theory(Bayes' Theorem)

- Statistical knowledge for ML-
  - Mean
  - Median
  - Mode
  - Z-scores
  - bias -variance dichotomy

- Tools required for development-
  - Anaconda
  - Jupyter NB

ML LIBRARIES EXPLAINED:
- Scipy
- Numpy
- Matplotlib
- Pandas
- Seaborn
- scikit-learn

- ML Glossary- Variable types, k-fold, CV, AUC ,
- F1 score, Overfitting / Underfitting, Generalization,
- Data split & hyper parameter training
- Data wrangling using Pandas
- Preprocessing data and feature engineering
- Exploratory Data analysis using Visualization
- Scikit-learn Library for ML
- Code Exercises

SUPERVISED LEARNING:
Regression:
- **Different types of Regression**
  - Linear Regression
  - Logistic Regression

- Decision tree Algorithms

- Real-world code exercises

SUPERVISED LEARNING-CLASSIFICATION
- Naive- Bayes' Classification
- KNN Classification
- Real-world code exercises :

UNSUPERVISED LEARNING:
- Clustering Introduction
  - k-means clustering
- Code Exercises

ADVANCED TOPICS:
- Curse of Dimensionality-PCA algorithm
- SVM Classification

INTRODUCTION TO OPENCV:
- Core functionality of OPEN CV
- Image processing
- GUI and Media interfacing
- Image input and output
- Video input and output

Real-time mini project

Note:
PREREQUISITES:
- Students are required to have the following prerequisites:
- Python programming
- Basic statistics
- Basic calculus
- Basic linear algebra