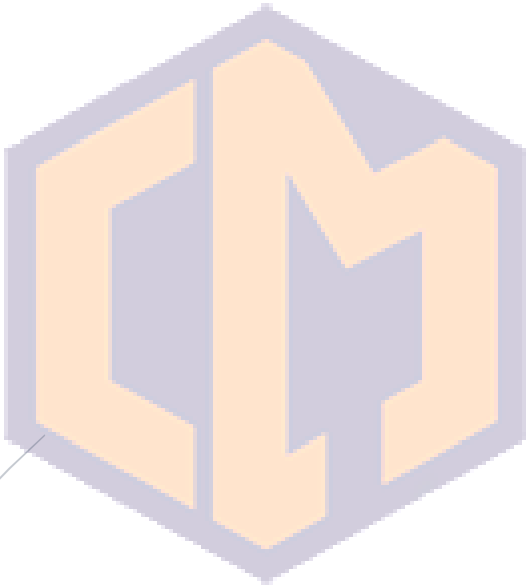
Machine Learning

Syllabus



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Phase I – Introduction to Data Science

Introduction to Data Science

- About Data Science
- Life Cycle of Data Science
- Skills required for Data Science
- Application of Data Science

About Programming

- What is programming?
- Different programming languages.
- Why choose python programming?

About Python

- Features
- Applications
- Popular Python IDEs
- How to install Python
- How to work with different IDEs
- Introduction to Jupyter Notebook

Basics of Python Programming

- Comment, Statement
- Tokens
- Keyword, Identifiers, Delimiters, Literals

- Identifiers
- Variable

Python Basic Data Types

- String
- Numeric

Python Control Flow Statement

- Decision Statement
- Loop Statement

Phase II – Data Structure & Advance Concepts

Python Advanced Data Structure

- List
- Tuple
- Dictionary
- Set

Python Programming Style

- Procedural programming
- Object-oriented programming

Python Module and Package

- Popular built-in module and packages for Data Science
- User-defined module and packages

Exception Handling

- Exception Handling Class and Statements
- Custom Exception Handling

Regular Expression

Phase III – Some Important ML Libraries

Introduction to Numpy

- N-Dimensional Array Data Structure
- Working with Matrices

Introduction to Pandas

- Pandas series data structure
- Pandas data frame and data structure
- Working with CSV, HTML, Excel, etc

Introduction to Matplotlib
Data Processing

- Missing data handling
- Categorical data handling
- Outlier treatment

Data Analysis

- Exploratory data analysis

Phase IV – Productive Model Building (Scikit)

Data pre-processing

- Feature scaling
- Feature engineering

Predictive Model Building Using Scikit Learn

- What are predictive analysis and its type
- Regression Model Building
- Linear Regression
- Gradient Descent
- Polynomial Regression
- Ridge Regression
- LASSO Regression
- K-Nearest Neighbor
- Classification Model
- K-Nearest Neighbor
- Logistic Regression
- Decision Tree
- Ensemble Learning
- Bagging
- Boosting
- Random Forest
- Naive Bayes
- Support Vector Machine

- Clustering Model
- K-Mean Clustering
- Mean Shift Algorithm
- Hierarchical Clustering

Model Evaluation and Hyper Parameter Tuning

- Cross-validation
- Grid search cross-validation
- Random search cross-validation

Text Data Processing

- Introduction to Text Processing
- Text Processing using NLTK
- Predictive Model Building

Image Data Processing

- Introduction to Image Processing
- Text Processing using OpenCV
- Predictive Model Building

Introduction to Neural Network using Scikit-Learn

Phase V – Project & Certification

- Project
- certification