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The Machine Learning Certification Training using Python course provides an overview of the concepts of Machine Learning. The delegates will gain a thorough knowledge of Machine Learning and its mechanism. The delegates will be able to use Machine Learning Algorithms efficiently to automate real life scenarios. The course teaches the importance of Machine Learning and its implementation in python programming language. The delegates will also be introduced to different classes of machine learning algorithms like supervised, unsupervised and reinforcement algorithms. The course will help the delegates in gaining expertise in Machine Learning and prepares them for the role of Machine Learning Engineer. This course imparts delegates the necessary skills required to master the Machine Learning concepts and techniques.

Machine Learning is simply making a computer to perform without being explicitly programmed. During the Machine Learning course, the delegates will learn about the most effective machine learning techniques and also gain the practical knowledge required to apply these techniques to new problems quickly and powerfully. The course exposes delegates to different machine learning algorithms like Naive Bayes, regression, Q-Learning and clustering. The delegates will also learn the Data Acquisition and Data Wrangling techniques, the importance of Dimensions, Association Rules, Recommendation Engines, Reinforcement Learning, Boosting and its importance in Machine Learning.

Prerequisites

The delegates must have development experience with Python before attending the course. However, fundamentals of Data Analysis practiced over any of the data analysis tools would be beneficial.

Course Objectives

By the completion of the Machine Learning course, the delegates will be able to:

- Work with real-time data
- Identify the ins and outs of Machine Learning
- Understand the 'Roles' played by a Machine Learning Engineer
- Describe Machine Learning
- Learn tools and techniques for predictive modeling
- Validate Machine Learning algorithms
- Gain expertise to handle business in future, living the present
- Automate data analysis using python
- Discuss Machine Learning algorithms and their implementation
- Explain Time Series and its related concepts

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Introduction to Data Science

- What is Data Science?
- What does Data Science involve?
- Era of Data Science
- Business Intelligence vs Data Science
- Life cycle of Data Science
- Tools of Data Science
- Introduction to Python

Data Extraction, Wrangling and Visualization

- Data Analysis Pipeline
- What is Data Extraction?
- Types of Data
- Raw and Processed Data
- Data Wrangling
- Exploratory Data Analysis
- Visualization of Data

Introduction to Machine Learning with Python

- Python Revision (numpy, Pandas, scikit learn, matplotlib)
- What is Machine Learning?
- Machine Learning Use-Cases
- Machine Learning Process Flow
- Machine Learning Categories
- Linear regression
- Gradient descent

Supervised Learning – I

- What is Classification and its use cases?
- What is Decision Tree?
- Algorithm for Decision Tree Induction
- Creating a Perfect Decision Tree
- Confusion Matrix
- What is Random Forest?

Dimensionality Reduction

- Introduction to Dimensionality
- Why Dimensionality Reduction
- PCA
- Factor Analysis
- Scaling dimensional model
- LDA

Supervised Learning – II

- What is Naïve Bayes?
- How Naïve Bayes works?
- Implementing Naïve Bayes Classifier
- Define Support Vector Machine?

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- Implementation of Support Vector Machine for Classification

Unsupervised Learning

- What is Clustering and it's Use Cases?
- What is K-means Clustering?
- How does K-means algorithm work?
- How to do optimal clustering
- What is C-means Clustering?
- Define Hierarchical Clustering?
- How Hierarchical Clustering works?

Association Rules Mining and Recommendation Systems

- What are Association Rules?
- Association Rule Parameters
- Calculating Association Rule Parameters
- Recommendation Engines
- How Recommendation Engines work?
- Collaborative Filtering
- Content Based Filtering

Reinforcement Learning

- What is Reinforcement Learning?
- Why Reinforcement Learning
- Elements of Reinforcement Learning
- Exploration vs Exploitation dilemma
- Epsilon Greedy Algorithm
- Markov Decision Process (MDP)
- Q values and V values
- Q – Learning
- ? values

Time Series Analysis

- Define Time Series Analysis
- Importance of TSA
- Components of TSA
- White Noise
- AR model
- MA model
- ARMA model
- ARIMA model
- Stationarity
- ACF & PACF

Model Selection and Boosting

- What is Model Selection?
- Requirement of Model Selection

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- Cross – Validation
- Define Boosting
- How Boosting Algorithms work?
- Types of Boosting Algorithms
- Adaptive Boosting

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