

Machine Learning & Introduction to Deep Learning

Duration : 45 hrs

infyni

Part -1

Python (15 hours)

1. Welcome to Python!
2. Getting Started
3. Syntax and Style
4. Python Objects
5. Numbers
6. Sequences: Strings, Lists, and Tuples
7. Dictionaries and Sets
8. Conditionals and Loops
9. Files and Input/Output
10. Errors and Exceptions
11. Functions
12. Advanced functions in python: lambda, comprehension
13. Numpy
14. Pandas
15. Visualization using Matplotlib

Part - 2

Statistics (10 hours)

1. Introduction to the course
2. Basics of Statistics
 - a. Random Variable
 - b. Data types
 - c. Qualitative and Quantitative Data
 - d. Measurement Scales
 - e. Population and Sample
3. Descriptive Statistics
 - a. Central Tendency
 - b. Variance
4. Data Visualization

- a. Line Charts
- b. Bar plots
- c. Histograms
- d. Box and Whisker Plots
- e. Scatter Plots
- f. Pie Charts
- g. Area Plots
- 5. Probability Concepts
- 6. Probability Distributions
 - a. Central Limit Theorem
 - b. Normal Probability Distribution
- 7. Inferential Statistics
- 8. Hypothesis tests
 - a. Types of errors
 - b. Test for Mean and Variance
 - c. One Sample Z test
 - d. Two Sample Z Test
 - e. One sample t test
 - f. Two Sample t Test
- 9. ANOVA (Analysis of Variance)

Machine Learning (5 hours)

- 1. Data Pre-processing & Exploratory Data Analysis
- 2. Regression
 - a. Simple Linear Regression
 - b. Multiple Linear Regression
 - i. R^2
 - ii. Adjusted R^2
 - iii. Multi Collinearity & VIF
 - iv. Understanding the Results
 - v. Fine Tuning the Model
 - c. SVR
 - d. Decision Tree Regression
 - e. Random Forest Regression

Part - 3

Machine Learning (15 hours)

- 1. Classification
 - a. Logistic Regression
 - i. Accuracy

- ii. Sensitivity
 - iii. Specificity
 - iv. Precision
 - v. Recall
 - vi. ROC
 - vii. AUC
 - viii. Fine Tuning the Model
 - b. K-Nearest Neighbours (K-NN)
 - c. Support Vector Machine (SVM)
 - d. Kernel SVM
 - e. Decision Tree Classification
 - f. Random Forest Classification
 - g. Bagging & Boosting
2. Dimensionality Reduction (Principal Component Analysis)
 3. Clustering
 - a. K-Means Clustering
 - b. Hierarchical Clustering
 4. k-Fold Cross Validation