€TRAINING

Complete Machine Learning with Python

13 - 17 October 2024
Istanbul (Turkey)
Sheraton Istanbul Levent

Complete Machine Learning with Python

REF: B1589 DATE: 13 - 17 October 2024 Venue: Istanbul (Turkey) - Sheraton Istanbul Levent Fee: 5850 Euro

Introduction:

In this training course, you'll go from beginner to extremely high-level and your instructor will build each algorithm with you step by step on screen. By the end of the course, you will have trained machine learning algorithms to classify flowers, predicting house prices, identify handwritings or digits, identify staff that is most likely to leave prematurely, detect cancer cells, and much more!

Course Objectives:

At the end of this course the participants will be able to:

- Make use of train/test, K-fold, and Stratified K-fold cross-validation to select the correct model and predict model perform with unseen data
- Use SVM for handwriting recognition, and classification problems in general
- Use decision trees to predict staff attrition
- Apply the association rule to retail shopping datasets
- Make use of unsupervised Machine Learning ML algorithms such as Hierarchical clustering, k-means clustering, etc. to understand your data
- Develop in Jupyter IPython notebook, Spyder, and various IDE
- Communicate visually and effectively with Matplotlib and Seaborn
- Engineer new features to improve algorithm predictions
- Gain complete machine learning toolsets to tackle most real-world problems
- Understand the various regression, classification, and other ml algorithms performance metrics such as R-squared, MSE, accuracy, confusion matrix, pre-vision, recall, etc., and when to use them.
- Combine multiple models by bagging, boosting, or stacking

Targeted Audience:

- Anyone willing and interested to learn machine learning algorithms with Python
- Anyone who has a deep interest in the practical application of machine learning to real-world problems
- Anyone wishes to move beyond the basics and develop an understanding of the whole range of machine learning algorithms
- Any intermediate to advanced EXCEL users who is unable to work with large datasets
- Anyone interested to present their findings in a professional and convincing manner
- Anyone who wishes to start or transit into a career as a data scientist
- Anyone who wants to apply machine learning to their domain

Course Outlines:

Unit 1: Getting Started with Anaconda

- Iris Project 1: Working with Error Messages
- Iris Project 2: Reading CSV Data into Memory
- Iris Project 3: Loading data from Seaborn
- Iris Project 4: Visualization

Unit 2: Regression

- Scikit-Learn
- EDA
- Correlation Analysis and Feature Selection
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- Linear Regression with Scikit-Learn
- Five Steps Machine Learning Process
- Robust Regression
- Evaluate Regression Model Performance
- Multiple Regression 1
- Multiple Regression 2
- Regularized Regression
- Polynomial Regression
- Dealing with Non-linear Relationships
- Feature Importance
- Data Preprocessing
- Variance-Bias Trade-Off
- Learning Curve
- Cross-Validation
- CV Illustration

Unit 3: Classification

- Logistic Regression
- Introduction to Classification
- Understanding MNIST
- SGD
- Performance Measure and Stratified k-Fold
- Confusion Matrix
- Precision
- Recall
- f1
- Precision-Recall Tradeoff
- Altering the Precision-Recall Tradeoff
- ROC

Unit 4: Support Vector Machine SVM

- Support Vector Machine SVM Concepts
- Linear SVM Classification
- Polynomial Kernel
- Radial Basis Function
- Support Vector Regression

Unit 5: Tree

- Introduction to Decision Tree
- Training and Visualizing a Decision Tree
- Visualizing Boundary
- Tree Regression, Regularization, and Over Fitting

- End to End Modeling
- Project HR
- Project HR with Google Colab

Unit 6: Ensemble Machine Learning

- Ensemble Learning Methods Introduction
- Bagging
- Random Forests and Extra-Trees
- AdaBoost
- Gradient Boosting Machine
- XGBoost Installation
- XGBoost
- Project HR - Human Resources Analytics
- Ensemble of Ensembles Part 1
- Ensemble of ensembles Part 2

Unit 7: K-Nearest Neighbours kNN

- kNN Introduction
- Project Cancer Detection

Unit 8: Unsupervised Learning: Dimensionality Reduction

- Dimensionality Reduction Concept
- PCA Introduction
- Project Wine
- Kernel PCA
- Kernel PCA Demo
- LDA vs PCA
- Project Abalone

Unit 9: Unsupervised Learning: Clustering

- Clustering
- k_Means Clustering