AI TESTING

Duration: 48 hours

Lab Requirements

- Python 3.x
- Anaconda

Day 1

Introduction to Machine Learning

- What is Machine Learning?
- Applications of Machine Learning
- Why Machine Learning is the Future
- Installing R and R Studio (MAC & Windows)
- Installing Python and Anaconda (MAC & Windows)

Data Pre-processing

- Data Pre-processing
- Importing the Libraries
- Importing the Dataset
- For Python learners, summary of Object-oriented programming: classes & objects
- Missing Data
- Categorical Data
- Splitting the Dataset into the Training set and Test set
- Feature Scaling

Day 2

Regression

- Simple Linear Regression
- Dataset + Business Problem Description
- Simple Linear Regression in Python
- Simple Linear Regression in R
- Multiple Linear Regression
- Multiple Linear Regression in Python

- Multiple Linear Regression in R
- Polynomial Regression
- Polynomial Regression in Python
- Polynomial Regression in R
- Support Vector Regression (SVR)
- SVR in Python
- SVR in R
- Decision Tree Regression in Python
- Decision Tree Regression in R
- Random Forest Regression in Python
- Random Forest Regression in R

Day 3

Classification

- Logistic Regression in Python and R
- K-Nearest Neighbors (K-NN)
- Support Vector Machine (SVM)
- Kernel SVM
- Naive Bayes
- Decision Tree Classification
- Random Forest Classification
- Confusion Matrix
- CAP Curve

Day 4

Clustering

- K-Means Clustering in Python and R
- Hierarchical Clustering in Python and R

Association Rule Learning

- Association Rule Learning in Python and R
- Apriori

Reinforcement Learning

- Upper Confidence Bound (UCB)
- Thompson Sampling

Day 5

Natural Language Processing

- Natural Language Processing in R
- Natural Language Processing in Python

Deep Learning

- Artificial Neural Networks in Python and R
- Convolutional Neural Networks in Python and R

Day 6

Artificial Intelligence in Testing

- AI for Software Testing Life Cycle (STLC)
- Overview
- AI based specific processes with actual prototypes
- Defect management and Automated Defect Prediction
- NLP based requirements analysis using Wordnet to seed test cases
- AI based GUI testing and design
- AI based processes - Conceptual
- Test Subset Selection
- Test Coverage of Requirements
- Automated traceability of requirements
- Automated Regression Test Selection
- Model based test case reduction
- AI based test prioritization
- AI based estimation
- AI based bug triaging
- AI based risk management
- AI based automation tools

- Applitools demo
- Conceptual Walkthrough
- Test.ai
- MABL
- Testim
- Appvance
- Functionize