QUALITAS TECHNO SOLUTIONS PVT. LTD.

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Data Science (ML & AI & DL) With Python.

Course Duration: 2 months

Introduction:

Machine learning methods are used for data analysis, this is where they are similar to data mining, but the main goal of machine learning is to automate decision models. Algorithms are the heart and soul of machine learning and they help computers to find hidden insights.

- **The machine needs to learn from data. Data will have multi dimensions- Type (quantitative or qualitative), amount (big or small size) and number of variables available to solve a problem.**
- **Learning algorithms should also be as general purpose as possible. We should be looking for algorithms that can be easily applied to a broad class of learning problems.**

The training aims at providing the participants with latest and general purpose machine learning algorithms. At the same time the training aims to deliver some common threads or a common knowledge base which can be used in future for learning a wide range of algorithms.

Machines have been driving our existence since the first industrial revolution to the current trend of industry 4.0. It is, thus, somewhat imperative to be an integral part of this revolution by making yourself well-acquainted with formidable technology platforms like Machine Learning, AI, & Deep Learning.

A recent report by Google concluded that since the last 18 months, the interest in Machine Learning has doubled.

In this age of innovation and disruption, technology landscape changes rapidly. One has to be upon their toes to remain updated and upgraded. In such a scenario, a course that incorporates the concepts of Advanced Machine Learning, AI, & Deep Learning in one package can be the best bet to learn and train you.

QTS offers a comprehensive training package based on the case study approach where participants take a deep plunge into the pragmatic aspects of learning Advanced Machine Learning, AI, & Deep Learning.

Considering the enormous potential of growth in machine learning, it is sure to be utilized in many other functions including increased office automation, twitter, feedback to customers, self- driving Google's cars and much more. It makes training on machine learning indispensable for people engaged in this field.

HIGHLIGHTS:

- **We provide 60 hours of class room training including live POC & assignments.**
- **It would be interactive session with Industry expert Instructor.**
- **Expert technical team available for query resolution.**

Post completion of the course, you will be awarded as a course completion certificate.

Section1: **Course Introduction**

- Introduction to the course (4Hrs)
- What is Data Science and why we have to learn?
- What is Machine learning and why we have to learn?
- Environment setup and Installation.
- Python IDLE Shell
- Jupyter Notebook Overview

Section 2. Python Basics

- Datatypes in Python (List / Dictionaries / Tuples / String) (25hrs)
- Operators
- Control Flow
- Functions, lambda expressions
- Python comparison operators.
- Modules.
- Object Oriented Concepts in python. (Class / Object)
- Inheritance / Polymorphism.
- File operations in python
- Exception Handling

Section3: Python Data Analysis

- Introduction to Numpy. (6Hrs)
- Numpy array Indexing, Operations.
- Exercise on Numpy.
- Introduction to Pandas
- Pandas Series usage
- Dataframes in pandas and its usage
- Missing data treatment using pandas
- Group by merging joining and concatenation operations using pandas.
- Data Input and Output using Pandas.

Section 4: Python for Data Visualizations

- Introduction to Data Visualization section (4Hrs)
- Implementation of matplotlib on various datasets.
- Exercise on Matplotlib.
- Seaborn.
- Distribution plot
- Categorical plot

- Matrix plot

Section 5. Statistics, Probability

- Types of Data (4Hrs)
- Mean, Median, Mode
- Using mean, median, and mode in Python.
- Variation and Standard Deviation.
- Standard Normal Distribution
- Percentiles.
- Probability Density Function; Probability Mass Function.
- Outliers and its effects in model building.
- Inter Quantile Range
- Covariance and Correlation
- Conditional Probability

Section 6: Introduction to Machine Learning.

- Introduction to machine learning. (25 Hrs)
- Supervised, Unsupervised and reinforcement learning.
- Classification vs clustering algorithms.

1) **Linear Regression**
    - model theory with mathematical Implementation
    - Exercise on Linear regression implementation using Scikit learn library
    - Multivariate Linear regression and Sales Prediction
2) **Logistic Regression**
    - model theory with mathematical Implementation
    - Exercise on Logistic regression implementation using Scikit learn library
    - Classification Problem Example
3) **K-Nearest Neighbors**
    - model theory with mathematical Implementation
    - Exercise on K-Nearest Neighbors implementation using Scikit learn library
    - Classification and Regression Problem Example
4) **SVM**
    - model theory with mathematical Implementation
    - Exercise on SVM implementation using Scikit learn library
    - Classification and Regression Problem Example
5) **Decision Tree**

- model theory with mathematical Implementation
- Exercise on Decision Tree implementation using Scikit learn library
- Classification and Regression Problem Example

6) **Random Forest**
   - model theory with mathematical Implementation
   - Exercise on Random Forest implementation using Scikit learn library
   - Classification and Regression Problem Example

7) **K-Means Clustering**
   - model theory with mathematical Implementation
   - Exercise on Decision Tree implementation using Scikit learn library
   - Classification and Regression Problem Example

- ***What is Feature extraction and feature selection?***
  - PCA implementation with python
  - Exercise problem on PCA.

- What is **Ensemble method**?
  - Clubbing multiple machine learning techniques.
  - BAGGING: Implementation with python.
  - BOOSTING: Implementation with python.
  - Exercise on Decision Tree and Random forest classifier its implementation using Scikit learn library.

- ***2 Projects using multiple Machine Learning Techniques.***

Section7: Recommender system

- What is recommender system? (8Hrs)
- Application of recommender system in real time applications.
- Types of recommender system (User based and Item based recommender system)
- Techniques to implement recommender system.
- Exercise on recommender system with python.

Project: Movie recommendation for users.

Section 8: Natural Language processing

- Introduction to Natural Language processing (8Hrs)
  - NLTK Python library.
  - How to handle text data using python.
  - Understanding Bag of words model for text analysis.

- Learning the implementation of Lemmatization / stemming / other text processing techniques.
- Email classification exercise.
- Sentiment Analysis on Restaurant review system.

Section 9: Artificial Intelligence with Deep Learning

- ***Artificial Neural Net and Deep Learning***
  - What is tensorflow? (20Hrs)
  - Tensorflow Installation.
  - Tensorflow basics.
  - MNIST with Multilayer perceptron example.
  - Tensorflow with Contrib Learn
  - TensorFlow Exercise.

- What is Keras?
  - Keras Basics.
  - Pipeline implementation using keras.
  - MNIST implementation with Keras.

Projects on Artificial Intelligence

- Building Artificial Neural Network for Churn Modeling using Keras.
  Building Convolution Neural Network for (Image Recognition & classification

Other Benefits

- **Resume preparation**
- **Industrial Training for 4-6 months with Training Certificate.**
- **Course completion Certificate.**
- **Mock Interview preparation by Industrial Experts.**
- **Job recommendation to 50+ Companies.**