



AI -Data Science Diploma

Mode of Training: Online, Classroom, Corporate

Faculty: Mr. Bhanu

Course Duration: 120 Days

A woman with dark, curly hair and black-rimmed glasses is standing in front of a large window with a grid pattern. She is wearing a light pink top and has her arms crossed. The background is a bright, modern office interior.

Course Curriculum

Course 1:

Statistics

Understanding the Data

- ✓ Data, Data Types
- ✓ Meaning of variables
- ✓ Central Tendency
- ✓ Measures of Dispersion
- ✓ Measures of Variability
- ✓ Measures of Shape
- ✓ Data Distribution
- ✓ Correlation, Covariance
- ✓ Practical Examples

Probability Distributions

- ✓ Mean, Expected value
- ✓ Binomial Random Variable
- ✓ Normal Distribution
- ✓ Poisson Random Variable
- ✓ Continuous Random Variable
- ✓ Discrete Random Variable
- ✓ Practical Examples

Sampling Distributions

- ✓ Central Limit Theorem
- ✓ Sampling Distributions for Sample Proportion, p -hat
- ✓ Sampling Distributions for Sample Mean, \bar{x}
- ✓ Z- Scores
- ✓ Practical Examples

Hypothesis Testing

- ✓ Type I and Type II Errors
- ✓ Decision Making
- ✓ Power
- ✓ Testing for mean, variance, proportion
- ✓ Practical Examples

Association between Categorical Variables

- ✓ Contingency Tables
- ✓ Independent and Dependent
- ✓ Pearson's Chi-Square Test
- ✓ Misuses of Chi-Squared Test
- ✓ Measures of Association
- ✓ Practical Examples

ANOVA Analysis

- ✓ Analysis of Variance & Co-Variance



- ✓ ANOVA Assumptions & Comparisons
- ✓ F-Tests
- ✓ Practical Examples

R - Programming

Fundamentals of R

- ✓ Installation of R & R Studio
- ✓ Getting started with R
- ✓ Basic and Advanced Data types in R
- ✓ Variable operators in R
- ✓ Working with R data frames
- ✓ Reading and writing data files to R
- ✓ R functions and loops
- ✓ Special utility functions
- ✓ Merging and sorting data
- ✓ Practice assignment

Univariate statistics in R

- ✓ Summarizing data, measures of central tendency
- ✓ Measures of data variability & distributions
- ✓ Using R language to summarize data
- ✓ Practice assignment

Data visualization in R

- ✓ Introduction exploratory data analysis
- ✓ Descriptive statistics, Frequency Tables and summarization
- ✓ Univariate Analysis (Distribution of data & Graphical Analysis)
- ✓ Bivariate Analysis (Cross Tabs, Distributions & Relationships, Graphical Analysis)
- ✓ Creating Graphs (Bar/pie/line chart/histogram/boxplot/scatter/density etc)
- ✓ R Packages for Exploratory Data Analysis (dplyr, plyr, gmodels, car, vcd, Hmisc, psych, doBy etc)
- ✓ R Packages for Graphical Analysis (base, ggplot, lattice, etc)

Hypothesis testing and ANOVA in R

- ✓ Introducing statistical inference
- ✓ Estimators and confidence intervals
- ✓ Central Limit theorem
- ✓ Parametric and non-parametric statistical tests
- ✓ Analysis of variance (ANOVA)

Data preparation using R

- ✓ Needs & methods of data preparation
- ✓ Handling missing values

- ✓ Outlier treatment
- ✓ Transforming variables
- ✓ Data processing with dplyr package

Tableau Desktop

Tableau Introduction

- ✓ Importance of Data
- ✓ Why Visual Analysis ?
- ✓ Why Tableau ?
- ✓ Tableau Extensions
- ✓ Understanding Navigation

Tableau Products

- ✓ Tableau Desktop
- ✓ Tableau Prep
- ✓ Tableau Students Edition
- ✓ Tableau Server
- ✓ Tableau Public
- ✓ Tableau Reader
- ✓ Tableau Online

Tableau Terminology

- ✓ Dimensions
- ✓ Measures
- ✓ Shelves
- ✓ Pills
- ✓ Show me
- ✓ Data Pane
- ✓ Groups
- ✓ Sets
- ✓ Dashboard
- ✓ Worksheet
- ✓ Stories



Data Connection

- ✓ Types of Data Connections
- ✓ Live Connection
- ✓ Extract Connection
- ✓ What is Extract File

Working with Data

- ✓ Data Types
- ✓ Data Values
- ✓ What is Data Source ?
- ✓ Connecting to DataSource
- ✓ Joins in Tableau
- ✓ When to use Joins
- ✓ Data Blending
- ✓ When to use Data Blending
- ✓ Joins vs Data Blending
- ✓ Custom SQL in Tableau
- ✓ Data refresh
- ✓ Filtering
- ✓ Sorting
- ✓ Hierarchies
- ✓ Drill down & Roll ups
- ✓ Grouping
- ✓ Creating Sets
- ✓ Working with Sets
- ✓ Parameters
- ✓ Creating Parameter
- ✓ Parameter Controls
- ✓ Aggregation



Visualizing Data

- ✓ Charting
- ✓ Line Graphs
- ✓ Blended Axis
- ✓ Dual vs Blended axis
- ✓ Horizontal Bar chart
- ✓ Vertical Bar Chart
- ✓ Stacked Bar Chart
- ✓ Pie Charts
- ✓ Gantt Charts
- ✓ Mapping
- ✓ Heat Maps
- ✓ Filed Maps
- ✓ Geo-Coding
- ✓ Formatting
- ✓ Advanced Charting
- ✓ Water Fall Charts

- ✓ Donut Charts
- ✓ Funnel Charts
- ✓ Lollipops Charts
- ✓ Whisker plots
- ✓ Scatter plots

Calculations

- ✓ String Calculations
- ✓ Date Calculations
- ✓ Boolean Calculations
- ✓ Functions

Statistical Models

- ✓ Linear Model
- ✓ Logarithmic Model
- ✓ Exponential Model
- ✓ Polynomial Model

Dashboards

- ✓ What is Dashboard ?
- ✓ Basic Dashboarding
- ✓ Advanced Dashboarding
- ✓ Formatting
- ✓ Actions
- ✓ Creating a Story



Sharing the Visuals

- ✓ Tableau Reader
- ✓ Tableau Public
- ✓ Tableau Server
- ✓ Tableau Online

Course 2 :

Python

Introduction

- ✓ What is Python Programming?

Installation

- ✓ Installing Python
- ✓ Choosing an editor or IDE

Python Basics

- ✓ Building Hello World
- ✓ Variables and expressions
- ✓ Python functions
- ✓ Conditional structures
- ✓ Loops

Working with Dates and Time

- ✓ The date, time, and datetime classes
- ✓ Formatting time output
- ✓ Using timedelta objects
- ✓ Working with calendars

Working with Files

- ✓ Reading and writing files
- ✓ Working with OS path utilities
- ✓ Using file system shell methods

Working with Web Data

- ✓ Fetching internet data
- ✓ Working with JSON data
- ✓ Parsing and processing HTML
- ✓ Manipulating XML

Introduction to NumPy

- ✓ NumPy overview
- ✓ Creating NumPy arrays
- ✓ Doing math with arrays
- ✓ Indexing and slicing
- ✓ Records and dates

Weather Data with NumPy

- ✓ Weather data overview
- ✓ Downloading and parsing data files
- ✓ Temperature analysis
- ✓ Integrating missing data
- ✓ Smoothing data
- ✓ Computing daily records
- ✓ Challenge
- ✓ Solution



Introduction to Pandas

- ✓ Pandas overview
- ✓ Series in Pandas
- ✓ DataFrames in Pandas
- ✓ Using multilevel indices
- ✓ Aggregation

Baby Names with Pandas

- ✓ Baby name overview
- ✓ Loading datasets
- ✓ Name popularity
- ✓ A yearly top ten
- ✓ Challenge
- ✓ Solution

Data Munging Basics

- ✓ Filter and select data
- ✓ Treat missing values
- ✓ Remove duplicates
- ✓ Concatenate and transform data
- ✓ Group and aggregate data
- ✓ Chapter Quiz

Data Visualization Basics

- ✓ Create standard line, bar, and pie plots
- ✓ Define plot elements
- ✓ Format plots
- ✓ Create labels and annotations
- ✓ Create visualizations from time series data
- ✓ Construct histograms, box plots, and scatter plots



Course 3 :

Machine Learning

Supervised Learning

- ✓ An Approach to Prediction
- ✓ Least Squares and Nearest Neighbors
- ✓ Statistical Decision
- ✓ Regression Models

Linear Methods for Regression

- ✓ The Gauss–Markov Theorem
- ✓ Multiple Regression
- ✓ Forward- and Backward-Stepwise Selection
- ✓ Ridge Regression
- ✓ Lasso Regression
- ✓ Example using Python

Linear Methods for Classification

- ✓ Linear Regression of an Indicator Matrix
- ✓ Linear Discriminant Analysis
- ✓ Logistic Regression
- ✓ Rosenblatt's Perceptron Learning Algorithm
- ✓ Example using Python

Kernel Smoothing Methods

- ✓ One-Dimensional Kernel Smoothers
- ✓ Local Linear Regression
- ✓ Local Polynomial Regression
- ✓ Mixture Models for Density Estimation and Classification
- ✓ Example using Python

Model Selection

- ✓ Bias, Variance and Model Complexity
- ✓ Optimism of the Training Error Rate
- ✓ Vapnik–Chervonenkis Dimension
- ✓ Cross-Validation

Model Inference & Averaging

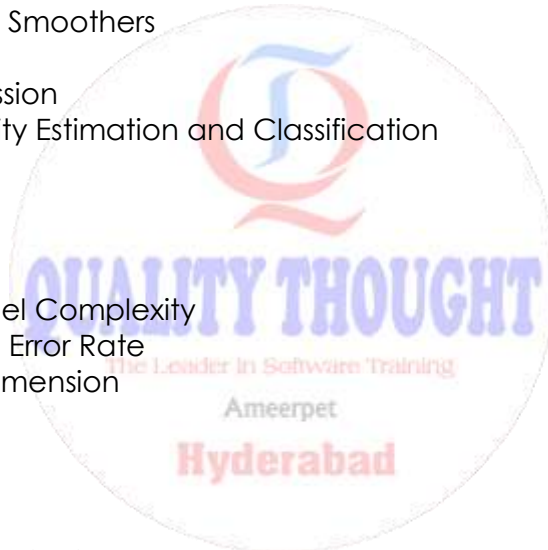
- ✓ Bootstrap and Maximum Likelihood Methods
- ✓ Relationship Between the Bootstrap and Bayesian Inference
- ✓ The EM Algorithm
- ✓ Bagging
- ✓ Example using Python

Tree-Based Methods

- ✓ Regression Trees
- ✓ Classification Trees
- ✓ Bump Hunting
- ✓ MARS: Multivariate Adaptive Regression Splines
- ✓ Example using Python

Boosting

- ✓ Steepest Descent
- ✓ Gradient Boosting



- ✓ Regularization
- ✓ Interpretation
- ✓ Example using Python

Neural Networks

- ✓ Fitting Neural Networks
- ✓ Over fitting
- ✓ Hidden Units
- ✓ Multiple Minima
- ✓ Single, Multi-Layer Perceptron
- ✓ Example using Python

Support Vector Machines (SVM)

- ✓ Support Vector Classifier
- ✓ Generalizing Linear Discriminant Analysis
- ✓ Flexible Discriminant Analysis
- ✓ Penalized Discriminant Analysis
- ✓ Example using Python

K-Nearest-Neighbor Classifiers

- ✓ Prototype Methods
- ✓ K-means Clustering
- ✓ Vector Quantization
- ✓ Gaussian Mixtures
- ✓ k-nearest Neighbors
- ✓ Example using Python



Unsupervised Learning

- ✓ The Apriori Algorithm
- ✓ Unsupervised as Supervised Learning
- ✓ Generalized Association Rules
- ✓ K-means Cluster Analysis
- ✓ Hierarchical Clustering
- ✓ Principal Components, Curves and Surfaces
- ✓ Non-Linear Dimension Reduction
- ✓ Example using Python

Random Forests

- ✓ Variable Importance
- ✓ Random Forests and Over fitting
- ✓ Bias
- ✓ Adaptive Nearest Neighbors
- ✓ Example using Python

Course 4:

Machine Learning in cloud

ML in Amazon Web Services

- ✓ Creating an Account with AWS
- ✓ How to create ML Model in AWS
- ✓ Regression Models
- ✓ Classification Models

ML in Microsoft Azure

- ✓ Creating an Account with Azure
- ✓ How to create ML Model in Azure
- ✓ Regression Models
- ✓ Classification Models

ML in GCP

- ✓ Creating an Account with GCP
- ✓ How to create ML Model in GCP
- ✓ Regression Models
- ✓ Classification Models

ML in IBM WATSON

- ✓ Creating an Account with IBM Watson
- ✓ How to create ML Model in IBM Watson
- ✓ Regression Models
- ✓ Classification Models



Course 5:

Machine Learning & BigData

Introduction to Big Data

- ✓ The four dimensions of Big Data: volume, velocity, variety, veracity
- ✓ Introducing the Storage, MapReduce and Query Stack

Delivering business benefit from Big Data

- ✓ Establishing the business importance of Big Data
- ✓ Addressing the challenge of extracting useful data
- ✓ Integrating Big Data with traditional data

Introduction to Hadoop

- ✓ What is Hadoop ?

Analyzing your data characteristics

- ✓ Selecting data sources for analysis
- ✓ Eliminating redundant data
- ✓ Establishing the role of NoSQL

Overview of Big Data stores

- ✓ Data models: key value, graph, document, column-family
- ✓ Hadoop Distributed File System
- ✓ HBase
- ✓ Hive
- ✓ Cassandra
- ✓ Hypertable
- ✓ Amazon S3
- ✓ BigTable
- ✓ DynamoDB
- ✓ MongoDB
- ✓ Redis
- ✓ Riak
- ✓ Neo4J
- ✓ ML Using Spark
- ✓ What is Machine Learning?
- ✓ Spark MLlib Overview
- ✓ Spark MLlib Tools
- ✓ MLlib Algorithms
- ✓ Use Case – Movie Recommendation System



Course 6:

Natural Language Processing

- ✓ Introduction
- ✓ Recognizing Natural Language Processing Applications
- ✓ Understanding NLP Tasks
- ✓ Tokenizing Text
- ✓ Removing Stopwords
- ✓ Identifying Bigrams
- ✓ Stemming and POS Tagging
- ✓ Disambiguating Word Meanings
- ✓ Contrasting Rule Based and Machine Learning Approaches
- ✓ Understanding Types of Machine Learning Problems in NLP
- ✓ Auto-summarizing Text

- ✓ Auto-summarizing Text Using a Rule-based Model
- ✓ Downloading an Article
- ✓ Preprocessing Article Text
- ✓ Extracting a Summary
- ✓ Classifying Text Using Machine Learning
- ✓ Outlining the Objective
- ✓ Building a Corpus of Tech Articles

Course 7:

Artificial Neural Networks

- ✓ Introduction to Tensor Flow, Keras
- ✓ Perceptrons
- ✓ Artificial Neural Networks
- ✓ Gradient Descent
- ✓ Back Propagation
- ✓ Convolutional Neural Networks
- ✓ Recurrent Neural Networks
- ✓ Optical character recognition (OCR)
- ✓ Case Study

Course 8:

Module 7: Deep Learning Using OpenCV (Computer Vision Technology)

Introduction

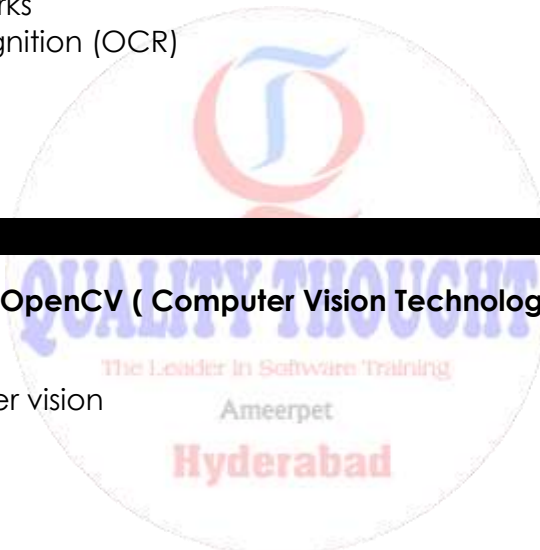
- ✓ Introduction to Computer vision
- ✓ What is Open CV?
- ✓ Installation of OpenCV
- ✓ Download Python
- ✓ Install Python

Basics of Computer Vision & open CV

- ✓ Working with images
- ✓ Forming images
- ✓ Storing images in Computer
- ✓ Gray scaling
- ✓ Color Spaces
- ✓ Representation of image
- ✓ Practical approach of creating images

Image Manipulations

- ✓ Transformations
- ✓ Image Translations
- ✓ Rotations
- ✓ Scaling, re-sizing & Interpolations
- ✓ Image Pyramids



- ✓ Cropping
- ✓ Brightening
- ✓ Darkening
- ✓ Image Masking
- ✓ Blurring
- ✓ Sharpening
- ✓ Dilation, Erosion
- ✓ Edge Detection
- ✓ Example

Image Segmentation

- ✓ Segmentation and contours
- ✓ Sorting contours
- ✓ Matching contour shapes
- ✓ Line detection
- ✓ Circle Detection
- ✓ Blob Detection
- ✓ Video analysis
- ✓ Emotion recognition,
- ✓ Facial expression analysis
- ✓ Introduction to GANs and applications.

Object Detection

- ✓ Introduction
- ✓ finding specific pattern in an Image
- ✓ Feature description
- ✓ Finding corners
- ✓ SIFT
- ✓ SURF
- ✓ FAST
- ✓ BRIEF
- ✓ Detect a specific object using webcam
 - Face Detection
 - Eye Detection
 - Human Detection
 - Car Detection
 - Pedestrian detection



Course9:

- ✓ Introduction to IOT
- ✓ Sensors and Actuators
- ✓ MicroContollers and Micro Processors
- ✓ Raspberry Pi Introduction
- ✓ Getting Started With Raspberry Pi
- ✓ How to Use WiringPi Library on Raspberry Pi
- ✓ Access Raspberry Pi Home Screen on Laptop Display using LAN(Ethernet)

- ✓ Raspberry Pi GPIO Access
- ✓ Raspberry Pi PWM Generation using Python
- ✓ Raspberry Pi UART Communication using Python
- ✓ Raspberry Pi I2C
- ✓ Python based I2C functions for Raspberry Pi
- ✓ Access Raspberry Pi on laptop using Wi-Fi
- ✓ GPS Module Interfacing with Raspberry Pi
- ✓ MPU6050 (Accelerometer + Gyroscope) Interfacing with Raspberry Pi
- ✓ Triple Axis Magnetometer HMC5883L Interfacing with Raspberry Pi
- ✓ DHT11 Interfacing with Raspberry Pi
- ✓ Pi Camera Module Interface with Raspberry Pi using Python
- ✓ PIR Motion Sensor Interfacing with Raspberry Pi using Python
- ✓ Stepper Motor Interfacing with Raspberry Pi
- ✓ AWS IOT Core
- ✓ Google Cloud IOT Core Integration
- ✓ Python3 + OpenCV3
- ✓ Project – Agriculture Project
- ✓ Project - RC Car Project
- ✓ Real-Time face Recognition: An End-to-End Project
- ✓ Face Detection and Recognition

Projects:

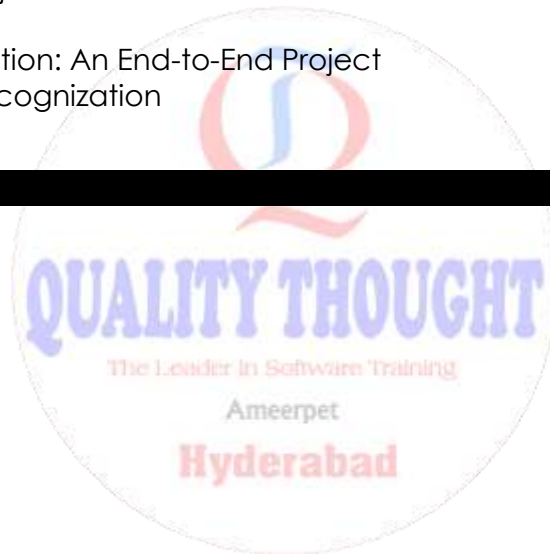
3 Real Time Projects:

- ✓ E Commerce Domain
- ✓ Media Domain
- ✓ Health Care Domain

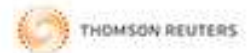
Books Set:

- ✓ 1. Statistics
- ✓ 2. R-program
- ✓ 3. Python Programming
- ✓ 4. Machine Learning
- ✓ 5. Deep Learning
- ✓ 6. Tableau

Interview Kit Book



Supporting Enterprises around the Globe





Our Other Courses

DevOps & Cloud Computing

- AWS Admin Training
- Devops Training
- Azure Admin Training

Artificial Intelligence & IOT

- Artificial Intelligence Diploma Training
- IOT Training

Bigdata

- Hadoop Development Training
- Spark And Scala Training

DataScience & Blockchain

- Data Science Training
- Blockchain Training

QA and Testing

- Manual Testing
- Big data Testing Training
- Selenium Training
- Appium Training
- Web services Testing Training
- Security Testing Training
- Performance Testing Training
- Tosca Training
- ETL Testing Training

RPA and Automation

- Automation Anywhere Training
- Blueprism Training
- Uipath Training

Programming & Framework

- Core Python
- Advanced Python Training
- Django Training
- C,C++Programming Training

Others courses

- Digital Marketing Training
- Spoken English Training
- Chat Bot Making Training
- BI Reporting Tools Training

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