Datatrained

LEARN ANYTHING, ANYTIME, ANYWHERE

PG PROGRAM IN DATA SCIENCE, MACHINE LEARNING & NEURAL NETWORKS

10 Months Program with hands on experience in analytical tools

in collaboration with IBM

www.datatrained.com

About Datatrained

Engineering and Management are very nearly losing its fascination as the best profession choice for most of the youths.

Every year millions of youngsters pass out from engineering and management colleges. However, only 7 percent of them have got the skills to be hired and sustain. According to the **All India Council for Technical Education (AICTE)**, out of the eight lakh graduate engineers and management graduates from the institutions across the country, more than 60 percent remain unemployed.

The world is changing at a rapid pace. The economic landscape is change and so is the change in skill set. The way we educate needs to be changed to keep up the pace with the new global economic reality.

DataTrained is a part of the solution.

Bringing together the right mix of distinguished celebrated faculty and global expert from around the world, who work beyond the traditional boundaries, training the next genertion of professional leaders, DataTrained offers a host of industry-sponsored programs in management, IT, banking, HR, Finance and artificial intelligence.

We have partnered with the leading universities around the work like Cornell University, Purdue University, Open University, and Lingayas University. These courses are developed keeping in view the futuristic demands of the corporate in emerging technologies and the fast-changing business environments. Our programs bring together the latest software content, real-world industry experiences, proved practices and case studies keeping pace with the latest industry requirements. Datatrained has designed a unique, modern and inspiring academic model that imparts an international approach kind of solution into the students' minds which convert them into corporate professionals ready to take on the ever-demanding corporate jobs.

PG Program in Data Science,
ML & Neural Networks

Data Science and Artificial intelligence have transformed the world completely. Organizations around the world are leveraging artificial intelligence to avoid repetitive tasks and improve customer experience. Robots are taking on the world by storm and are continuously building intelligence comparable to human brains.Artificial Intelligence and Machine Learning are the highest paying jobs in the world. As per a recent estimate, more than 90% of the companies will use artificial intelligence in one way or the other to build or enhance their products and services. These companies are looking for people who are skilled in data science and AI.Unfortunately, the industry is facing an acute shortage of highly skilled people to fill the void.

Fortunately, DataTrained decided to be a part of the solution.

Welcome to DataTrained 10 months Post Graduate Program(PGP) in Data Science, Machine Learning and Neural Networks developed in collaboration with eCornell's University as a content partner.

We have been awarded as the best institute for data science/analytics institute in India- Ranking 2019-2020.

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Course Curriculum

D

MODULE-1

- Introduction to Data Science
- Data Science Era
- Data Science involvement in Industries
- Business Intelligence vs Data Science
- Data Science Life Cycle
- Tools of Data Science
- Introduction to Python
- Introduction to Machine Learning

MODULE-2

- Introduction to Python Programming
- Introduction to Python
- Basic Operations in Python
- Variable Assignment
- Functions: in-built functions, user defined functions
- Condition: if, if-else, nested if-else, else-if
- Pre Reads (Attachment for students)
- Assignment (For student)
- Assignment Solution

MODULE-3

- Data Structure - Introduction
- List: Different Data Types in a List, List in a List
- Operations on a list: Slicing, Splicing, Sub-setting
- Condition(true/false) on a List
- Applying functions on a List
- Dictionary: Index, Value
- Operation on a Dictionary: Slicing, Splicing, Sub-setting
- Condition(true/false) on a Dictionary
- Applying functions on a Dictionary
- Modules and Packages
- Regex operations
- Pre Reads (Attachment for students)
- Assignment (For student)
- Assignment Solution

MODULE-4

- Introduction to SQL (Structured Query Language)
- Basic SQL statement
- Advanced SQL (Searching, sorting, grouping)
- Accessing databases using python

MODULE-6.1

- Python Pandas - Home
- Python Pandas - Introduction
- Python Pandas - Environment Setup
- Introduction to Data Structures
- Python Pandas - Series
- Python Pandas - Data Frame

MODULE- 5

- Data Types in an Array, Dimensions of an Array
- Operations on Array: Indexing, Slicing, Splicing, Sub-setting
- Conditional(T/F) on an Array
- Loops: For, While
- Shorthand for For
- Control statements
- Shape Manipulation
- Linear Algebra

MODULE-7

- Intro to Statistics
- Statistical Inference
- Terminologies of Statistics, Descriptive statistics
- Statistical functions Measures of Centres
- Mean
- Median
- Mode Measures of Spread
- Variance Standard Deviation
- Histogram Probability
- Normal Distribution
- Binary Distribution
- Poisson distribution
- Skewness
- Bell curve
- Hypothesis Building and Testing
- Chi-Square Test
- Correlation Matrix

- Python Pandas - Panel
- Python Pandas - Basic Functionality
- Function Application
- Python Pandas - Reindexing
- Python Pandas - Iteration
- Python Pandas - Sorting
- Working with Text Data
- Options & Customization
- Indexing & Selecting Data

MODULE- 6.2

- Python Pandas - Missing Data
- Python Pandas – Group By
- Python Pandas - Merging/Joining
- Python Pandas - Concatenation
- Python Pandas - Date Functionality
- Python Pandas - Categorical Data
- Python Pandas – Visualization
- Pre Reads (Attachment for students)
- Assignment (For student)
- Assignment Solution

MODULE- 8

- Scientific computing with Python
- SciPy and its Characteristics
- SciPy sub-packages
- SciPy sub-packages –Integration
- SciPy sub-packages – Optimize
- Linear Algebra
- SciPy sub-packages – Statistics

MODULE-9

- Data Analysis Pipeline
- What is Data Extraction
- Types of Data (Raw & Processed Data)
- Data Wrangling Exploratory Data Analysis Data Visualization Matplotlib
- Bar Plot
- Histograms Plot
- Box Plot
- Area Plot
- Scatter Plot
- Pie Plot
- Seaborn
- Pre Reads (Attachment for student) Assignment (For student)
- Assignment Solution

MODULE-11

- Data Pre-processing
- Data preparation
- Intro to Scikit Learn

MODULE-13

- Classification K-nearest neighbours
- Metrics
- Confusion Matrix
- Classification report
- Support Vector Machines
- Kernel
- Working of SVM
- Naive Bayes
- Hyperparameter Optimization

MODULE-10

- Introduction to Machine Learning
- Machine Learning Use-Cases
- Machine Learning Process Flow
- Machine Learning Categories

MODULE-12

- Regression
- Types
- Algorithms
- Linear Regression
- RMSE
- R2 score
- Logistic Regression
- Introduction to Dimensionality
- Why Dimensionality Reduction
- PCA
- Factor Analysis
- Scaling dimensional model
- Encoding
- Implementation with Case Studies
- Intro to Kaggle and UCI repository
- Pre Reads (Attachment for students)
- Assignment (For student)
- Assignment Solution

MODULE-14

- Unsupervised learning
- Clustering Algorithms
- K-Means Clustering
- Hierarchical Clustering
- Implementation with Case Studies
- Pre Reads (Attachment for students)

- Decision Tree Classifier
- Random Forest Classifier
- Ensemble Techniques and SVM tuning
- Underfitting & Overfitting
- Entropy
- AUC-ROC Curve
- Implementation with Case Studies
- Cross –validation
- Pre Reads (Attachment for students)
- Assignment (For student)
- Assignment Solution

- Assignment (For student)
- Assignment Solution

MODULE-15

- Recommendation Engine
- Collaborative filtering
- The course will be covering 12 + industrial real time case studies

MODULE-16

Specialization Course: Students can opt any one elective

Elective-1 : Deep Learning with Computer Vision

- Deep Learning
- Computer Vision OCR/OCV
- Advanced SQL
- Tableau
- Cloud Computing

Elective-2 : Deep Learning with NLP

- Deep Learning
- Computer Vision OCR/OCV
- Advanced SQL
- Deep NLP
- Tableau
- Cloud Computing

Elective-3 : Business Analytics with R

- R and R Shiny
- Advanced SQL
- Power BI
- Advanced Excel
- Cloud Computing

Elective-4 : Business Analytics with Tableau

- Tableau
- Advance Excel
- Google Data Studio
- Power BI
- Advanced SQL
- Cloud Computing

Elective-5 : Data Engineering

- Big Data & Linux os
- Hadoop
- Apache Spark
- Advanced SQL
- Google Data Studio
- Cloud Computing

Elective-6 : Business Analytics with SAS

- Power BI
- Advanced Excel
- Google Data Studio
- SAS
- Advanced SQL
- Cloud Computing

COURSE	ELECTIVE					
	E1	E2	E3	E4	E5	E6
Deep Learning with Neural Network & TensorFlow	✓	✓	✗	✗	✗	✗
Deep Learning with NLP	✗	✓	✗	✗	✗	✗
Computer Vision OCR/OCV	✓	✗	✗	✗	✗	✗
DNLP	✗	✓	✗	✗	✗	✗
Cloud Computing	✓	✓	✓	✓	✓	✓
Big Data	✗	✗	✗	✗	✓	✗
Advance SQL	✓	✓	✓	✓	✓	✓
Advance Excel	✗	✗	✓	✓	✗	✓
Tableau	✓	✓	✗	✓	✗	✗
Power BI	✗	✗	✓	✓	✗	✓
Google Data Studio	✗	✗	✗	✓	✓	✓
R Language	✗	✗	✓	✗	✗	✗
SAS	✗	✗	✗	✗	✗	✓

Course Description

D

Deep Learning with Neural Network & TensorFlow

Deep Learning

- Deep Learning: A revolution in Artificial Intelligence
- Limitations of Machine Learning
- What is Deep Learning?
- Advantage of Deep Learning over Machine learning
- 3-Reasons to go for Deep Learning
- Real-Life use cases of Deep Learning
- Review of Machine Learning: Regression, Classification, Clustering, Reinforcement Learning
- Underfitting and Overfitting, Optimization

Understanding Neural Networks with TensorFlow

- How Deep Learning Works?
- Activation Functions
- Illustrate Perceptron
- Training a Perceptron
- Important Parameters of Perceptron
- What is TensorFlow?
- TensorFlow code-basics
- Graph Visualization
- Constants, Placeholders, Variables
- Model Creation

Deep dive into Neural Networks with TensorFlow

- Introduction to Single Perceptron & it's limitations
- Concept of Neural Networks (Detailed Description)
- Introduction of Multi-Layer Perceptron
- Backpropagation – Learning Algorithm
- Understand Backpropagation – With Examples of Neural Network
- MLP Classifier using TensorFlow
- Tensor Board

Deep Neural Nets

- Introduction to Deep Networks it's application
- How Deep Network Works?
- How Backpropagation Works?
- Illustrate Forward pass, Backward pass
- Different variants of Gradient Descent
- Types of Deep Networks

Convolutional Neural Networks (CNN)

- Introduction to CNNs & it's Application
- Architecture of a CNN
- Convolution and Pooling layers in a CNN
- Understanding and Visualizing a CNN
- Building a convolutional neural network for image classification. The model should predict thedifference between 3 categories of images

Recurrent Neural Networks (RNN)

- Introduction to RNN Model & its application
- Sequences Modelling
- Training RNNs with Backpropagation
- Long Short-Term memory (LSTM)
- Recursive Neural Tensor Network Theory
- Recurrent Neural Network Model

Restricted Boltzmann Machine (RBM) and Autoencoders

- Introduction to Restricted Boltzmann Machine & its applications
- Collaborative Filtering with RBM
- Introduction to Autoencoders
- Autoencoders applications
- Understanding Autoencoders

Keras API

- Introduction to Keras
- Models Building in Keras
- Sequential & Functional Composition
- Predefined Neural Network Layers
- What is Batch Normalization
- Saving and Loading a model with Keras
- Customizing the Training Process
- Using Tensor Board with Keras

TFLearn API

- Define TFLearn
- Composing Models in TFLearn
- Sequential Composition
- Functional Composition
- Predefined Neural Network Layers
- What is Batch Normalization
- Saving and Loading a model with TFLearn
- Customizing the Training Process
- Using Tensor Board with TFLearn
- Use-Case Implementation with TFLearn

Deep learning with NLP

Natural Language Processing (NLP)

- Introduction to NLP
- Syntax, Semantics, and Pragmatics analysis in NLP
- Applications of NLP
- Ambiguity

Part Of Speech Tagging and Sequence Labeling

- lLexical Syntax
- Hidden Markov Models and Forward and Viterbi algorithms and EM training
- Training RNNs with Backpropagation
- Evaluating Tagger Model
- Recursive Neural Tensor Network Theory
- Recurrent Neural Network Model

Basic Neural Network

- Introduction to perceptron and propagation
- Pattern Recognition and Machine Learning

Syntactic Parsing

- Grammar Formalisms and Treebanks
- Efficient parsing for context-free grammars(CFGs)
- Statistical parsing and probabilistic CFGs (PCFGs)
- Lexicalized PCFGs
- Neural shift-reduce dependency parsing

Semantics Analysis

- Lexical semantics and word-sense disambiguation
- Compositional Semantics

- Semantic Role Labeling
- Semantic Parsing

Information Extraction

- Named entity recognition and relax extraction
- IE using sequence labeling

Machine Translation

- Basic issues in MT
- Statistical translation
- Word alignment
- Phrase-based translation
- Synchronous grammars

NLP with Deep learning

- RNN (Recurrent Neural Network)

Computer Vision OCR/OCV

Introduction to Computer Vision, OpenCV, Installation & dependencies

VGG & Transfer Learning

ResNet (&Inception)

Object Detection

Facial Landmark Detection

- Introduction to Dlib
- Facial Landmarks Detection using dlib
- Application - Face Alignment
- Improving Speed of Facial Landmark Detector
- Improving accuracy of Facial Landmark Detector
- Train a custom Facial Landmark Detector

Face Recognition

- Face Recognition Overview
- Eigen Faces
- Fisher Faces
- Local Binary Patterns Histograms
- PCA and LDA
- Deep Metric Learning
- Deep Learning based Face Recognition

Image Classification

- Learn about Convolutional Neural Networks
- Building blocks of a CNN
- Train simple models using Keras
- Fine tune state-of-the-art models for your application in Keras

Generative Adversarial Networks (GAN)

- Introduction to GAN
- Difference Between GAN & Discriminative Algorithms
- Label Smoothing
- Spectral Normalization
- Training of GAN Model

Optical Character Reader (OCR)

- Introduction to OCR
- Introduction to OCR Libraries
- Open Source tools & Technology & How it works
- Installation of Tesseract
- Running Tesseract

OpenCV with OCR

- Pre-processing of Tesseract
- Bounding Box Creation around Text & & Images
- Matching of Text Template
- Detecting the digits with Tesseract
- Mask RCNN Implementation (Images & Videos)

Orientation & Script Detection

- Detect of Digits only
- Blacklisting & Whitelisting of Characters
- Detecting Multiple languages
- Application of Tessdata_fast

Training of Tesseract on Custom Data

Limitation of Tesseract

DNLP

Introduction to NLP and DL

- Basic Concept of NLP
- Introduction to DL and its types
- Concept of DL

Simple Word Vector

- Word to Vector
- Glove

Advanced Word Vector

- Language Models
- Softmax, Swish and Sigmoid
- Single Layer Network
- Named entity Recognition

Underfitting and Overfitting

- Gradient Checks
- Overfitting Problems
- Regularization Process
- Uses of Activation Functions

Introduction to Concept Of Tensorflow

- Basic Concept of Tensorflow (module and libraries)
- Applications

Language Modelling

- RNN (Recurrent Neural Network)

Machine Translation

- GRUs
- LSTMs

Parsing

- Recursive Neural Network

Cloud Computing

Overview of Cloud Computing

- Definition and essential characteristics in cloud
- A brief history and evolution of Cloud
- Key cloud service providers and their services in cloud

Cloud Adoption and Emerging Technologies

- Business case for Cloud Computing
- Emerging technologies supported by Cloud: AI, IoT, Blockchain, Analytics in cloud

Cloud Computing Service and Deployment Models

- Service Models: IaaS, PaaS, SaaS in cloud
- Deployment Models: Public, Private, Hybrid in cloud

Components of Cloud Computing

- Cloud Infrastructure Overview
- Virtualization, VMs, Bare Metal in cloud
- Secure Cloud Networks in cloud
- Containers in cloud

Cloud Storage

- Direct Attached in cloud
- File Storage in cloud
- Block Storage in cloud
- Object Storage in cloud
- Content Delivery Networks (CDN) in cloud

Cloud Native and Emergent Cloud Trends

- Hybrid Multicloud in cloud
- Serverless in cloud
- Microservices in cloud
- Cloud Native in cloud

Big Data

Linux

- Introduction
- Linux Philosophy and Components
- Linux Structure and Installation
- Graphical
- System Configuration from the Graphical Interface
- Command-line
- Finding Linux Documentation
- File Operations
- User Environment
- Text Editors
- Manipulating Text
- Printing
- Bash Shell Scripting

Big Data

- Introduction to Hadoop
- Why Learn Hadoop
- What's New in Hadoop 3
- Features of Hadoop

- The Hadoop Ecosystem
- Hadoop Architecture
- Hadoop Pros and Cons
- Hadoop Analytics Tools
- Internal Working of Hadoop
- Hadoop Commands
- Hadoop getmerge Command
- Hadoop copyFromLocal Command
- Hadoop Clusters
- Hadoop HDFS
- Introduction to HDFS
- Apache Hadoop HDFS Tutorial
- HDFS Architecture

Features of HDFS

- HDFS Read-Write Operations
- HDFS Data Read Operation
- HDFS Data Write Operation
- HDFS Commands
- HDFS Data Blocks
- HDFS Rack Awareness
- HDFS High Availability
- HDFS NameNode High Availability
- HDFS Federation- Architecture & Benefits
- HDFS Disk Balancer
- Erasure Coding in HDFS
- Fault Tolerance in HDFS

Hadoop MapReduce

- Hadoop MapReduce
- Introduction to MapReduce
- MapReduce Data Flow
- How Hadoop MapReduce Works
- MapReduce Mapper
- MapReduce Reducer
- MapReduce Key-Value Pairs
- MapReduce InputFormat
- MapReduce InputSplit
- MapReduce RecordReader
- MapReduce Partitioner
- MapReduce Combiner
- Shuffling-Sorting in MapReduce
- MapReduce OutputFormat
- MapReduce InputSplit vs Blocks
- MapReduce Map Only Job
- Data Locality in MapReduce
- MapReduce Speculative Execution
- Counters in MapReduce
- MapReduce Job Optimization
- Performance Tuning in MapReduce
- Apache Spark vs Hadoop MapReduce

Spark

- Introduction to Spark
- What is Spark?
- Spark Environment Setup for Ubuntu
- Spark Installation in Standalone Mode
- Spark Terminologies & Concepts
- Spark Ecosystem Components
- How does Spark Work?- Runtime Architecture
- Spark Shell Commands
- Installing Multinode Clusters for Spark
- SparkContext and its Functions
- Spark RDD, Features, and Operations
- Ways to Create a Spark RDD
- Spark RDD Persistence & Caching
- Spark RDD Features
- Spark RDD Limitations
- Spark Transformations and Actions on RDDs
- Spark RDD Lineage
- Apache Spark Paired RDD

PIG

- Introduction to Pig
- Pig Environment Setup
- Apache Pig Features
- Apache Pig Architecture
- A Comprehensive Guide to Apache Pig

- Pros and Cons of Pig
- Pig Architecture & Execution Modes
- Pig Grunt Shell Commands
- Pig Built-in Functions
- User-Defined Functions in Pig
- Introduction to Pig Latin
- Pig Latin Operators and Statements
- Executing Apache Pig Scripts
- Reading and Storing Pig Data and Operators
- Apache Pig Execution Modes and Mechanisms
- Pig vs Hive

Flume

- Introduction to Flume
- Flume Environment Setup- Ubuntu
- Flume Architecture
- Flume Features & Limitations
- Use Cases of Flume
- Flume Source
- Flume Sink
- Flume Sink Processors
- Flume Channel Selectors
- Flume Channel
- Flume Event Serializers
- Flume Interceptors
- Flume Data Flow
- Flume Data Transfer to HDFS
- Flume Troubleshooting

Sqoop

- Introduction to Sqoop
- Sqoop Environment Setup
- Sqoop Features
- Sqoop Architecture
- Importing Data from RDBMS to HDFS- Sqoop
- Exporting Data from HDFS to RDBMS- Sqoop
- Sqoop Eval- Commands and Query Evaluation
- Sqoop import-all-tables
- Sqoop Validation- Interfaces and Limitations
- Sqoop Codegen Arguments and Commands
- Combining Datasets with Sqoop Merge
- Sqoop Metastore Tool
- Sqoop Troubleshooting Tips & Known Issues
- Sqoop List Tables and their Arguments
- Sqoop List Databases and Syntax
- Creating and Executing Jobs in Sqoop
- PSqoop Connectors & Drivers (JDBC)
- Sqoop Import Mainframe Tool
- Databases Supported in Sqoop
- Sqoop + HCatalog Integration

Hbase

- Introduction to HBase
- Features of HBase
- SHBase Architecture
- HBase Pros & Cons
- HBase Use Cases
- SHBase Shell Commands and Usage
- HBase Read & Write Operations
- HBase Commands to Define and Manipulate Data
- HBase Table Management Commands
- HBase Data Manipulation Commands- Create, Truncate, Scan
- HBase Admin API
- HBase Client API
- HBase MemStore Configuration and Benefits
- HBase Optimization: Performance Tuning
- HBase Compaction and Data Locality in Hadoop

- A Comprehensive Guide to Apache HBase
- HBase + MapReduce Integration
- HBase vs RDBMS
- HBase vs Impala
- HBase vs Hive
- HBase Security: Kerberos Authentication and Authorization
- Troubleshooting in HBase

Hive

- Introduction to Apache Hive
- A Comprehensive Guide to Apache Hive
- Hive Environment Setup- Ubuntu
- Hive Features and Limitations
- Apache Hive Architecture
- Apache Hive Data Types
- Apache Hive Built-in Operators
- Built-In Functions in Hive
- User-Defined Functions (UDF) in Hive
- Hive DDL Commands and Types
- Views and Indexes in Hive
- Configuring Hive Metastores
- Developing Data Models in Hive
- Hive Custom and Built-in SerDe
- Hive Data Partitioning
- Bucketing in Hive
- Hive Partitioning vs Bucketing
- Apache Hive Joins and Types
- Map Join in Hive
- Bucket Map Join in Hive
- Skew Join in Hive
- Hive SMB (Sort Merge Bucket) Join
- Hive Internal vs External Tables
- Configuring Hive Metastore to MySQL
- HiveQL (Hive Query Language) Select Statement
- HiveQL Group By Clause
- HiveQL Order By Clause
- 7 Best Hive Optimization Techniques
- HBase vs Hive
- Pig vs Hive

Kafka

- Introduction
- Introduction to Apache Kafka
- Features of Kafka
- Kafka Terminologies
- Apache Kafka Pros & Cons
- Apache Kafka Applications
- Apache Kafka Architecture
- Apache Kafka Workflow(Pub-Sub Messaging)
- Kafka Cluster Setup
- Kafka Producers
- Kafka Consumers
- Kafka Brokers
- Kafka Queuing- Messaging System
- Creating Kafka Clients
- Apache Kafka Connect
- Kafka-Docker: Kafka using Docker
- Kafka Topics
- Kafka Tools
- Kafka Monitoring Tools
- Kafka Operations with Commands
- Role of Zookeeper in Kafka
- Kafka Streams- Stream & Real-Time Processing
- Apache Kafka + Spark Streaming Integration
- Kafka + Hadoop Integration
- Kafka Optimization- Performance Tuning
- Kafka Load Testing with JMeter
- Storm-Kafka Integration
- Kafka SerDe
- Kafka Schema Registry
- Security Concepts in Kafka

Advance SQL

Introduction

- Basics of SQL
- Filtering and Sorting Data
- Functions
- Manipulating Data
- Handling Tables and Joins
- Including Constraints
- Creating Views, Creating other Database Objects (Sequences, Indexes and Synonyms)

PLSQL

- Introduction
- Identifiers
- Variables
- Scalar Data Types
- The % Type attribute
- Sequences in PL/SQL expressions
- Executable statements
- PL/SQL block syntax
- Type Casting
- Operators
- Invoke SELECT Statements in PL/SQL
- Data Manipulation in the Server using PL/SQL
- SQL Cursor Attributes to obtain Feedback on DML
- Save and discard transactions

Control Structures

- Conditional processing using IF statements and CASE statements
- Loops(For and While)
- Control Structures
- The % ROWTYPE attribute
- Insert and update with PL/SQL records
- Index
- Use of Cursor
- The % NOTFOUND and % ROWCOUNT Attributes
- The FOR UPDATE Clause and WHERE CURRENT Clause

Exception Handling

- Handling Oracle Server Errors
- RAISE_APPLICATION_ERROR Procedure

Stored Procedures

- Modularized and Layered Subprogram Design
- Anonymous Blocks vs Subprograms
- Using Stored Procedures
- Implement Procedures Parameters and Parameters Modes
- Debugging
- Create, Call, and Remove a Stored Function
- Control side effects while calling Functions
- Debug Functions and Procedures
- Packages components and Package Development
- Packages Deployment
- Overloading Subprograms in PL/SQL
- Control side effects of PL/SQL
- Invoking PL/SQL Tables of Records

Dynamic SQL

- SQL flow
- Execution of PL/SQL Block
- Native Dynamic SQL to Compile PL/SQL Code
- DBMS_SQL Package
- Implementation of DBMS_SQL
- Triggers
- Manage, Test and Remove Triggers
- Compound Triggers
- Creating Triggers on DDL Statements
- Database-Event and System-Events Triggers

Advanced SQL

- User Access
- SET operators
- Enhancements to Group by clause (cube, Rollup and Grouping)
- Advanced Subqueries
- Hierarchical retrieval

Advance Excel

Introduction to Advance Excel

- Overview Of Basics of Excel

What If Analysis

- Scenario Analysis in Excel

- PMT function
- Uses Of Solver Tool

Logical Functions

- If function
- EFixing Errors (if error)
- Nested if
- Uses of Complex if and or functions

Data Validation

- Validating Number, Date and Time
- Validating Text and List
- Custom Validations
- Dynamic dropdown (Dependency list)

Lookup Functions

- Vlookup or Hlookup
- Concept of Index and Match
- Making smooth user interface using Lookup
- Nested Vlookup
- Reverse Lookup by choose function
- Worksheet linking using Indirect
- Vlookup using helper column

Pivot Tables

- Creating simple Pivot Tables
- Basic and Advanced uses of Value Field Setting
- Classic Pivot tables
- Grouping
- Calculated Field and Calculated Items

Array Functions

- Array
- If, len and mild functions
- Lookup Functions

Charts and Slicers

- Bar Charts, Pie Charts, Histogram and Line Charts
- Filter Data with Slicers
- Application and Control on Primary and Secondary Axis

Excel Dashboard

- Planning of Dashboard

- Adding Tables and Charts to Dashboard
- Adding Dynamic Content to Dashboard

Tableau

Tableau Introduction

- Tableau - Overview
- Getting Started
- Connecting to Data
- Visual Analytics
- Dashboards and Stories
- Mapping
- Calculations

All About Tableau Environment

- Get Started With Tableau Desktop
- All About Navigating in Tableau
- Tableau Design Flow

File Operations

- File Handling and File Types in Tableau
- Data Handling and Data Types in Tableau
- Show Me Option in Tableau
- Data Identifying in Tableau
- Connecting to Data Sources in Tableau

Data in Tableau

- Data Sources types
- Working with Data in Tableau
- Custom Data View
- Extracting Data
- Fields Operations
- Editing Metadata
- Data Joining
- Data Blending

Working with Worksheets in Tableau

- Add Worksheets in Tableau
- Rename Worksheet in Tableau
- Save & Delete Worksheet in Tableau
- Reorder Worksheet in Tableau
- Pages and Paged Workbook in Tableau

Mathematical Operation in Tableau

- Calculations in Tableau
- All about Operators in Tableau
- Types of Functions in Tableau
- Arithmetic and Numeric Calculations in Tableau
- Text | String Calculations in Tableau
- Dates and Date Calculations in Tableau
- Tableau - Table Calculations in Tableau

Level of Detail expressions

- Level of Detail expressions- LOD Expressions in Tableau
- Sorts in Tableau
- Tableau - Basic Sorting in Tableau

Filters in Tableau

- Introduction of Basic Filters in Tableau
- Simple Quick Filters in Tableau
- Text based Context Filters in Tableau
- Condition Filters in Tableau
- Using Top Filters in Tableau
- All Filter Operations in Tableau

Charts

- Introduction of Charts in Tableau
- Bar Chart in Tableau
- Line Chart in Tableau
- Pie Chart in Tableau
- Cross tab in Tableau
- Scatter Plot in Tableau
- Bubble Chart in Tableau
- Bullet Graph in Tableau
- Box Plot in Tableau
- Tree Map in Tableau
- Bump Chart in Tableau

- Gantt Chart in Tableau
- Histogram in Tableau
- Motion Charts in Tableau
- Waterfall Charts in Tableau
- Other Charts in Tableau

Dash Board and Story Telling

- Dashboard in Tableau
- Story Telling in Tableau
- Formatting in Tableau
- Forecasting in Tableau
- Trend Lines in Tableau
- Other Important parts of Tableau-Bonus

- DAX Functions for Math & Trigonometric
- DAX Functions for Text

Power BI

Introduction of Power BI

- Why Power BI
- Advantage of Power BI Power BI - Installation Steps
- Design of Power BI tool
- Data Sources Power BI
- Comparison of Power BI with Other BI Tools
- Data Modeling Power BI
- Dashboard Options Power BI
- Visualization Options Power BI
- Excel Integration Power BI
- Working and Sharing Power BI Dashboards

DAX

- DAX Basics in Power BI
- What is DAX Functions
- DAX Functions types
- Formal DAX Functions Introduction
- DAX Parameter and there Naming Conventions
- DAX Functions for Aggregation
- DAX Functions for Filter
- DAX Functions for Time Intelligence
- DAX Functions for Date and Time
- DAX Functions for Information
- DAX Functions for Logical

Google Data Studio

The Introduction to Data Studio

- Welcome to Data Studio
- Data Studio overview
- How Data Studio works
- Access controls

Navigate Data Studio

- Data Studio Home page
- Data source overview
- Report overview
- Report edit mode overview

Build Your First Report

- Connect Data
- Create a new report and add charts
- Add and configure report controls
- Share reports with others

Format and Design Reports

- Data visualization basics
- Create and use report templates

R Language

Introduction

- Introduction to R
- Installing R, R Studio & Anaconda

R Basic

- R data types and objects
- Categorical & Continuous Variables
- Reading and Writing Data
- Operators
- Functions

Decision Making & Loop Control

- Control Structures
- Loop Functions

Scope and Error Handling

- Scoping Rules
- Debugging Tools

Array, Object, and Data Frame

- Array, List, Matrices and Data frames in R
- Categorical & Continuous Variables
- Dplyr library
- Data Frame: Create, Append, Select, Subset
- List : Create, Select Elements
- Data manipulation using Dplyr
- Merging data frames

Data Handling

- Importing and exporting different data Types
- Treating missing value
- Aggregate functions- Summaries and Group_by
- Select, Filter and Arrange functions
- Pipeline

Analysis

- Data analysis
- Bar chart & Histogram
- Line Chart
- Boxplot
- Scatter plot using ggplot2
- Heatmap
- T-test
- ANOVA

Machine Learning with R

- Types of Machine Learning algorithm
- Linear & Logistic regression
- Decision Tree & Ramdom Forest
- K-Means clustering
- KNN
- Dimensionality reduction
- Hyper parameter tuning

- Model Evaluation
- Accuracy, Precision, Recall & F1 score

SAS

Introduction to SAS

- What is SAS?
- Data types and Libraries Used in SAS

Data Steps and Proc Steps

- Introduction
- Format & In-format
- Proc Print and Proc Contents
- Output Delivery System (ODS)
- Column Input
- Data Step Processing

Data Handling

- Formatted Input and List input
- Date and Time Format
- Instream Data
- Assignment and Cumulative Statement
- Subsetting Data, Drop and Keep Option
- Set statement

Decision Making and Loop Control

- Control Statement If-else
- if-else with do statement
- Loops- When, Do-loop

Functions

- Basic of Function
- String Functions and Conversion Functions
- Date Functions and Mathematical Functions
- Descriptive Statistics

Proc

- Proc Means
- Proc Freq
- Proc report-column
- Proc tabulate
- Proc transpose

- Combining data set
- One to one Reading
- Concatenation and merge
- Array-Single
- Multi Dimensional array
- Proc printto
- Proc import
- Proc export

6 Months Online Internship is Part of the Curriculum

During this 6 months of Online Internship you will be engaged in real time work which will be shown as an experience on your resume. Various industry tools will be practically taught to you during this duration :

1. Cloud Computing

2. Project Deployment tools

3. Tableau Essentials for project visualization

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