



Google CEO



Microsoft CEO

BOTH FROM
INDIA

TOMORROW YOU

NAME :

- **Technical Training**
- **Aptitude** ● **Softskills** ● **Practice**

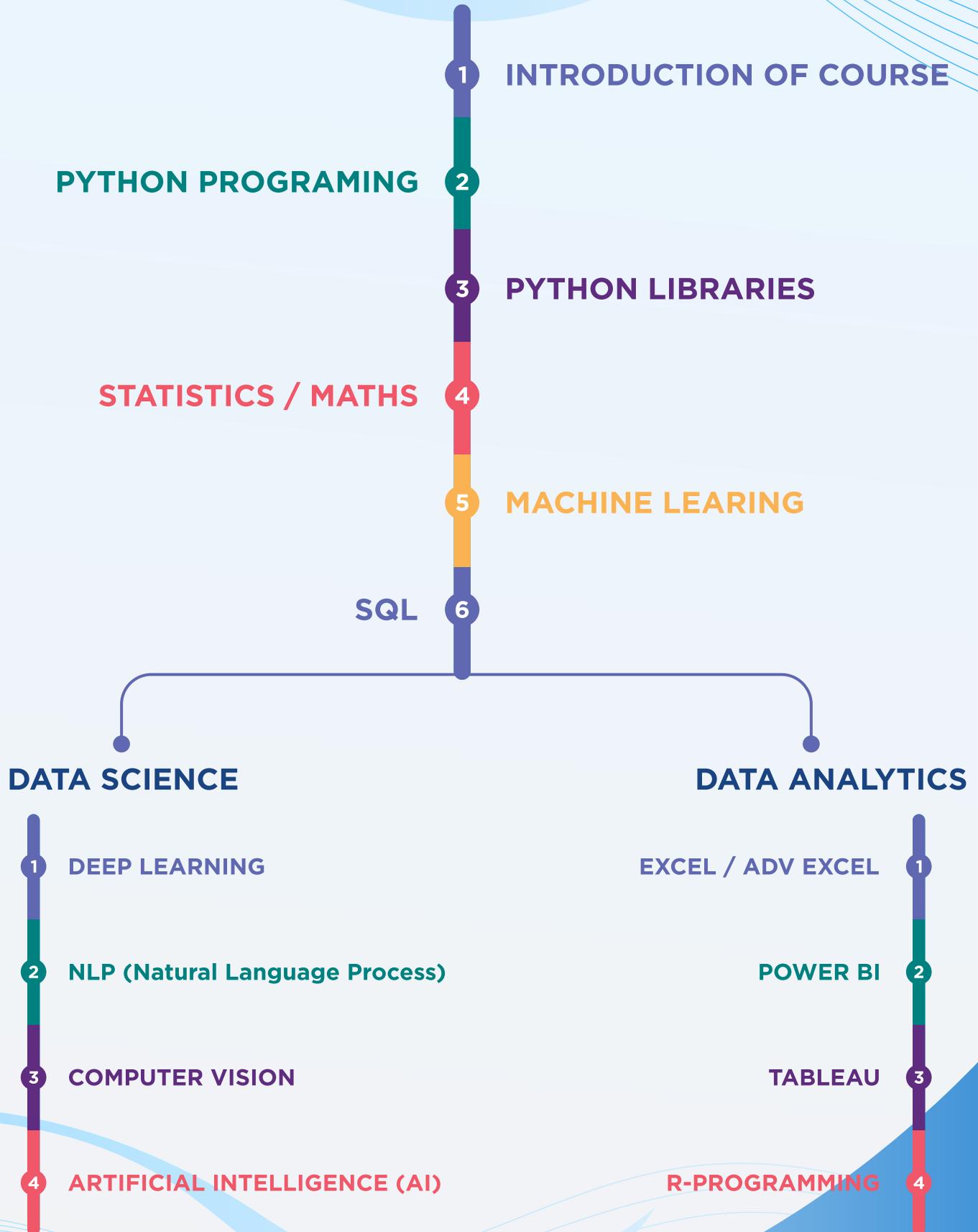
| CSR B. TECH FROM (NITW) 18+YEARS EXPERIENCE IN IT

MASTERS IN DATA SCIENCE / AI
MASTERS IN DATA ANALYTICS

OFFERED PROGRAMS

1. Any Graduation
2. By Realtime Experts
3. Weekly Test
4. Cumulative Test
5. Up to 3 Live Projects
6. Mock Interviews
7. Resume Preparations
8. Live Class Videos
9. Internship Certificate

Learning Path



1. Introduction of Course

- 1. What is Data Science**
- 2. How it is different from Big Data and Data Analytics**
- 3. Data Driven decision making**
- 4. Purpose and Business problems**
- 5. How Data Scientist work**
- 6. Skills of a data scientist**
- 7. Different sectors using Data science**
- 8. Real World Applications**
- 9. Future of AI and how the world is changing**

2. Python Programming

- **Why python for data analysis**
- **how to install Anaconda**
- **Running few simple programs using python**
- **Python objects**
 - ✓ **Lists**
 - ✓ **Strings**
 - ✓ **sets**
 - ✓ **file objects**
 - ✓ **Tuples**
 - ✓ **Dictionaries**
 - ✓ **Arrays, Data frames in python**

3. Python Libraries

- ✓ **NumPy**
- ✓ **SciPy**
- ✓ **Matplotlib**
- ✓ **Pandas**
- ✓ **Scikit Learn**
- ✓ **Seaborn**
- ✓ **os**
- ✓ **regular expressions**
- **Introduction to Series and Data frames**
- **Visualization on dataset using python**
- **Distribution analysis in python**
- **Box plot in python**
- **Comments in python**
- **Functions in python**
- **conversion functions**

- **Math functions**
- **User defined Functions**
- **Parameters and arguments of functions**
- **Range functions python**
- **Recursive function and its examples**
- **Conditionals in python**
 - ✓ **If loop**
 - ✓ **elif**
 - ✓ **if elif else**
 - ✓ **Loops in python**
 - ✓ **for loop**
 - ✓ **while loop**

- **What is pandas?**
- **Benefits of using pandas**
- **Broadcasting in Python**
- **Array shape manipulations**
- **Data structures in pandas**
 - ✓ **Series**
 - ✓ **Data frame**
 - ✓ **Panel**
- **Various Data Frame Operations**
 - ✓ **Selection**
 - ✓ **Deletion etc.**
 - ✓ **"Grouping, Merging, and Reshaping of Data**
 - ✓ **Group by**
 - ✓ **Aggregate**
 - ✓ **Transform**
 - ✓ **Filtering**
 - ✓ **Merging and joining (concat and append)**
 - ✓ **Drop "**
- **Apply functions in pandas**
- **Accessing the objects in python by index**
- **Creating matrixes using NumPy**
- **Statistical operators using NumPy**

4. Statistics / Maths

- **Introduction to Statistics**
 - ✓ **Statistical and Non-Statistical Analysis**
 - ✓ **Major categories of statistics – Frequency and Bayesian**
 - ✓ **Difference between Statistics and Probabilities**
 - ✓ **Statistical terms**
 - ✓ **Difference between Descriptive Statistics and Inferential Statistics**
 - ✓ **Understanding of Population and Samples**
- **Descriptive Statistics**
- **Inferential Statistics**

- **Central Limit Theorem**
- **Types of variables**
 - ✓ **Nominal/Categorical**
 - ✓ **Ordinal**
 - ✓ **Interval/Ratio**
 - ✓ **Continuous, Time Series**
- **Central Tendency**
 - ✓ **Mean**
 - ✓ **Weighted mean**
 - ✓ **Trimmed mean/Truncated Mean**
 - ✓ **Interquartile mean**
 - ✓ **Trimmed Mean**
 - ✓ **Median**
 - ✓ **Mode**
- **Measure of Statistical dispersions**
 - ✓ **Variance and Bessel correction**
 - ✓ **Standard Deviation**
 - ✓ **Standard Error**
 - ✓ **Margin of Error**
 - ✓ **IQR**
 - ✓ **Range**
 - ✓ **Mean absolute difference**
 - ✓ **median absolute deviation**
 - ✓ **Coefficient of variance**
 - ✓ **Skewness**
 - ✓ **Kurtosis**
 - ✓ **Degrees of freedom**
 - ✓ **Law of Large Numbers**
 - ✓ **Confidence Level & Interval**
 - ✓ **P value and its interpretation**
 - ✓ **Correlation and auto correlation & correlation matrix**
 - ✓ **Correlation ratio**
- **Sampling Techniques**
- **Sampling errors**
- **Sample size estimation**
- **Point estimation & margin of error**
- **Multi Collinearity**
- **Co-variance and correlation**
- **P- value and critical value approach**
- **T-Distribution and T-Statistics**
- **Hypothesis testing's**
 - ✓ **What is Hypothesis Testing**
 - ✓ **Different types of Errors (Type I and Type II Errors)**
 - ✓ **Z-test**
 - ✓ **T-test**

- ✓ Chi-square test
- ✓ Power test, Beta test
- ✓ ANOVA (one way and two way)
- ✓ F-test & f score
- ✓ P-Value & Significance Level

Probability

- Probability
- Venn diagram
- counting (permutation & combination)
- Expectation
- Conditional probability
- Joint Probability
- Marginal Probability
- Mutually exclusive events and Rules of Independence
- Rules of Probabilities
- Bayesian Network
- Random Variables and Expected Values

5. Machine Learning

- Supervised Learning
- Unsupervised Learning
- Difference between Classification and Regression
- Data pre-processing
 - What is data set.
 - What is training set
 - What is test set and need for test set
 - Missing values treatment
 - Expectation-Maximization technique for missing value
 - using Gradient
 - Feature scaling
 - Feature transformation
 - binning
 - one hot encoding
 - Feature engineering
 - Outliers' treatment
 - Bias and Variance trade off
 - Over fitting and Under fitting
- Exploratory Data analysis (EDA)
 - Univariate analysis
 - Continuous variable
 - Categorical variable
 - Bivariate Analysis
 - Continuous - Continuous
 - Categorical and Categorical
 - Categorical and Continuous "

- **Feature Engineering**
- **Variable transformation**
- **Variable /Feature Creation**
- **Project**
- **Supervised Regression Algorithms**
 - **Simple Linear Regression**
 - **Multiple Linear Regression**
 - **Ordinary Least Square (OLS)**
 - **Decision tree Regression**
 - **Random Forest Regression**
 - **GLM (Poisson regression, spline)**
 - **Support Vector Machines Regression**
 - **Error and Accuracy**
 - **Gradient Descent**
 - **Regularization Techniques**
 - **Maximum Likelihood estimation (MLE)**
 - **Probabilistic diagnosis of outliers**
 - **L2 and L1 Norms**
 - **Ridge Regression**
 - **Lasso Regression and Elastic Net**
 - **Project**
- **Supervised Classification Algorithms**
 - **Logistic regression classification**
 - **Multiclass Classification using Logistic Regression**
 - **Decision tree Classification**
 - **Random Forest classification**
 - **Support Vector Machines classification**
 - **What is Naïve Bayes theorem and the limitation**
 - **Naïve Bayes Classification**
 - **Ada boost/ Adaptive - Boosting Algorithm**
 - **GBM**
 - **Probability in Classification**
 - **Creating the log loss formula with entropy**
 - **SoftMax Function**
 - **MLE in classification**
 - **Understanding the Neural Networks**
 - **SVM**
 - **Gradient Boosting**
 - **XG Boost (Extreme Gradient Boosting)**
 - **Project**
- **Unsupervised Algorithms**
 - **K-means Clustering**
 - **Hierarchical clustering**
 - **Association Rule Mining**
 - **KNN Classifier**
 - **PCA**
 - **Project**

- **Model Evaluation Metrics**
 - **ROC Curves**
 - **Confusion matrix**
 - **Accuracy**
 - **Recall & Precision**
 - **Specificity & Sensitivity**
 - **Receiver Operating Characteristic (ROC) curve**
 - **Area Under Curve (AUC)**
 - **F1-Score**
 - **AIC & BIC Scores**
 - **R squared & Adjusted R squared**
 - **RMSE, MSE**

- **Model selection Techniques**
 - **Cross validation**
 - **Boot strap**
 - **Model selection using Statistical tests**
 - **Grid search**
 - **Evaluation Matrix**

6. SQL

Introduction to RDBMS

- **What is Data Base**
- **Importance of Data Base**
- **Working RDBMS**
- **Why is Data Base need in Industries**
- **What is the use of Data Engineering in DB**

Sub Language Commands

- **Data Definition Language (DDL)**
- **Data Retrieval Language (DRL)**
- **Data Manipulation Language (DML)**
- **Transaction Control Language (TCL)**
- **Database Security and Privileges (DCL)**
- **Oracle Pre Defined Datatypes**
- **DDL Commands**
- **Create, Alter (add, modify, rename, drop) Columns, Rename, truncate, drop**
- **DML- Insert, update, delete**
- **DQL-SELECT Statements using WHERE clause**
- **Comparison and Conditional Operators**
- **Arithmetic and Logical Operators**
- **Special Operators – IN (NOT IN), BETWEEN (NOT BETWEEN), LIKE (NOT LIKE), IS NULL (IS NOT NULL)**
- **Transactional commands**
- **Rollback**
- **Commit**
- **Save Point**
- **Working with joins**
- **inner join**
- **outer join**
- **cross join**
- **full join**
- **Working with Subquery**
- **Single-row subquery**
- **Multiple row subquery**
- **Correlated subquery**
- **Nested subquery**

I. DATA SCIENCE

a. Intro to Neural Network & Deep Learning

- Intro
- Deep Learning Importance [Strength & Limitations]
- SP MLP
- Neural Network Overview
- Neural Network Representation
- Activation Function
- Loss Function
- Importance of Non-linear Activation Function
- Gradient Descent for Neural Network

Parameter & Hyper parameter

- Train, Test & Validation Set
- Vanishing & Exploding Gradient
- Dropout
- Regularization-Optimization algo
- Learning Rate
- Tuning
- Softmax

CNN

- CNN
- Deep Convolution Model
- Detection Algorithm
- Face Recognition

RNN

- GAN
- RNN
- LSTM
- Bi Directional LSTM
- ANN

b. NLP (Natural Language Processing)

- Introduction to NLP
- Stop Words
- Tokenization
- Stemming and Lemmatization
- Bag of Words Model
- Word Vectorizer
- TF-IDF
- POS Tagging
- Named Entity Recognition
- Introduction to Sequential data
- RNNs and its Mechanisms
- Vanishing & Exploding gradients in RNNS

- **LSTMS-Long short-term memory**
- **GRUS - Gated Recurrent Unit**
- **LSTMs Applications**
- **Time Series Analysis**
- **LSTMs with Attention Mechanism**
- **Neural Machine Translation**
- **Advanced Language Models: Transformers, BERT, XLNet**

c. Computer Vision

- **Introduction to Convolutional Neural Networks**
- **Introduction to Images**
- **Convolution, Pooling, Padding & its Mechanisms**
- **Forward Propagation & Backpropagation for CNNs**
- **CNN architectures like AlexNet, VGGNet, InceptionNet & ResNet**
- **Transfer Learning**
- **Object Detection**
- **YOLO, R-CNN, SSD**
- **Semantic Segmentation**
- **U-Net**
- **Face Recognition using Siamese Networks**
- **Instance Segmentation**

d. Artificial Intelligence (AI)

- **AI vs ML vs DL vs GenAI**
- **Supervised vs Unsupervised Learning**
- **Discriminative vs Generative AI**
- **A Brief Timeline of GenAI**
- **Basics of Generative Models**
- **Large Language Models**
- **Word Vectors**
- **Attention Mechanism**
- **Business Applications of ML, DL and GenAI**
- **Hands-on Bing Images and ChatGPT**

II. Data Analytics

a. Excel / Adv Excel

- **Introduction to Excel**
- **Columns & Rows**
- **Functionality Using Ranges**
- **Excel Basic & Advanced Formulae's**
- **Data Analysis Using Excel**
- **Pivot & Power Pivot**
- **Spreadsheet Tools**
- **Data Cleaning**
- **Data Validation**
- **Data Visualization Using Excel**

b. Power BI

- **Power BI Introduction**
- **Data Visualization, Reporting**
- **Business Intelligence (BI), Traditional BI, Self-Serviced BI**
- **Cloud Based BI, On Premise BI**
- **Power BI Products**
- **Power BI Desktop (Power Query, Power Pivot, Power View)**
- **Flow of Work in Power BI Desktop**
- **Power BI Report Server, Power BI Service, Power BI Mobile Flow**
- **Power Query**
- **Data Transformation, Benefits of Data Transformation**
- **Shape or Transform Data using Power Query**
- **Overview of Power Query / Query Editor, Query Editor User Interface**
- **Ribbon (Home, Transform, Add Column, View Tabs)**
- **The Queries Pane, The Data View / Results Pane, The Query**
- **Settings Pane, FormulaBar**
- **Saving the Work**
- **Datatypes, Changing the Datatype of a Column Filter in Power Query**
- **Auto Filter/ Basic Filtering**
- **Filter a Column using Text Filters**
- **Filter a Column using Number Filters**
- **Filter a Column using Date Filters**
- **Filter Multiple Columns**
- **Remove Columns / Remove Other Columns**
- **Name / Rename a Column**
- **Reorder Columns or Sort Columns**
- **Add Column / Custom Column SplitColumns**
- **Merge Columns**
- **PIVOT, UNPIVOT Columns**
- **Transpose Columns**
- **Header Row or Use First Row as Headers**
- **Keep Top Rows, Keep Bottom Rows Keep Range of Rows**
- **Keep Duplicates, Keep Errors**
- **Remove Top Rows, Remove Bottom Rows, Remove Alternative Rows**
- **Remove Duplicates, Remove Blank Rows, Remove Errors**
- **Group Rows / Group By**
- **Data Modeling**
- **Data Modeling Introduction**
- **Relationship, Need of Relationship**
- **Relationship Types / Cardinality in General**
- **One-to-One, One-to-Many (or Many-to-One), Many-to-Many Auto**
- **Detect the relationship, Create a new relationship, Edit existing relationships**
- **Make Relationship Active or Inactive**
- **Delete a relationship**
- **DAX**
- **What is DAX, Calculated Column, Measures**
- **DAX Table and Column Name Syntax**
- **Creating Calculated Columns, Creating Measures Calculated**
- **Columns Vs Measures**
- **DAX Syntax & Operators**

- **DAX Operators**
- **Types of Operators**
- **Arithmetic Operators, Comparison Operators, Text Concatenation**
- **Operator, Logical Operators**
- **DAX Functions Types**
- **Date and Time Functions**
- **Text Functions**
- **Logical Functions**
- **Math & Statistical Functions**
- **Filter Functions**
- **Time Intelligence Functions**
- **Date and Time Functions**
- **YEAR, MONTH, DAY**
- **WEEKDAY, WEEK**
- **NUMFORMAT (Text Function) à Month Name, Weekday Name**
- **DATE, TODAY, NOW**
- **HOUR, MINUTE, SECOND, TIME**
- **DATEDIFF, CALENDAR**
- **Creating Date Dimension Table**
- **Text Functions**
- **LEN, CONCATENATE (&)**
- **LEFT, RIGHT, MID UPPER, LOWER**
- **TRIM, SUBSTITUTE, BLANK**
- **Logical Functions**
- **IF TRUE, FALSE NOT, OR, IN, AND**
- **IFERROR SWITCH**
- **Math & Statistical Functions**
- **INT ROUND, ROUNDUP, ROUND DOWN**
- **DIVIDE**
- **EVEN, ODD**
- **POWER, SIGN**
- **SQRT, FACT**
- **SUM, SUMX**
- **MIN, MINX**
- **MAX, MAXX**
- **COUNT, COUNTX**
- **AVERAGE, AVERAGEX**
- **COUNTROWS, COUNT BLANK**
- **Filter Functions**
- **CALCULATE**
- **ALL RELATED**
- **Report View**
- **Report View User Interface**
- **Fields Pane, Visualizations pane, Ribbon, Views, Pages Tab, Canvas**
- **Visual**
- **Interactions**
- **Interaction Type (Filter, Highlight, None)**
- **Visual Interactions Default Behavior, Changing the Interaction**

- **Grouping and Binning Introduction**
- **Using grouping, Creating Groups on Text Columns**
- **Using binning, Creating Bins on Number Column and Date Columns**
- **Sorting Data in Visuals**
- **Changing the Sort Column, Changing the Sort Order**
- **Sort using column that is not used in the Visualization**
- **Sort using the Sort by Column button**
- **Hierarchy Introduction, Default Date Hierarchy**
- **Creating Hierarchy, Creating Custom Date Hierarchy**
- **Change Hierarchy Levels**
- **Drill-Up and Drill-Down Reports**
- **Data Actions, Drill Down, Drill Up, Show Next Level**
- **Visualizations**
- **Visualizing Data, Why Visualizations**
- **Visualization types, Create and Format Bar and Column Charts**
- **Create and Format Stacked Bar Chart Stacked Column Chart Create and**
- **Format Clustered Bar Chart, Clustered Column Chart**
- **Create and Format 100% Stacked Bar Chart, 100% Stacked Column**
- **Chart Create and Format Pie and Donut Charts**
- **Create and Format Scatter Charts**
- **Create and Format Table Visual, Matrix Visualization**
- **Line and Area Charts**
- **Create and Format Line Chart, Area Chart, Stacked Area Chart**
- **Combo Charts**
- **Create and Format Line and Stacked Column Chart, Line and**
- **Clustered Column Chart**
- **Create and Format Ribbon Chart, Waterfall Chart, Funnel Chart**
- **Power BI Service**
- **Power BI Service Introduction, Power BI Cloud Architecture**
- **Creating Power BI Service Account, SIGN IN to Power BI Service Account**
- **Publishing Reports to the Power BI service, Import / Getting the Report to PBI Service My**
- **Workspace / App Workspaces Tabs**
- **DATASETS, WORKBOOKS, REPORTS, DASHBOARDS**

c. Tableau

- **Tableau Architecture**
- **Tableau introduction and overview Workbook, Stories,**
- **Dashboards and Worksheets**
- **Sources and Data Connection Types**
- **Graphs/Maps/Charts**
- **Define bar charts and line charts**
- **Define individual axis, blended axis and dual axis**
- **Define filled maps and symbol maps**
- **Define heat maps and tree maps**
- **Define pie charts**
- **Define Gantt charts.**
- **Filters and Sort**
- **filters - Filter on Measures and Dimension.**
- **Global filters**
- **Context filters**

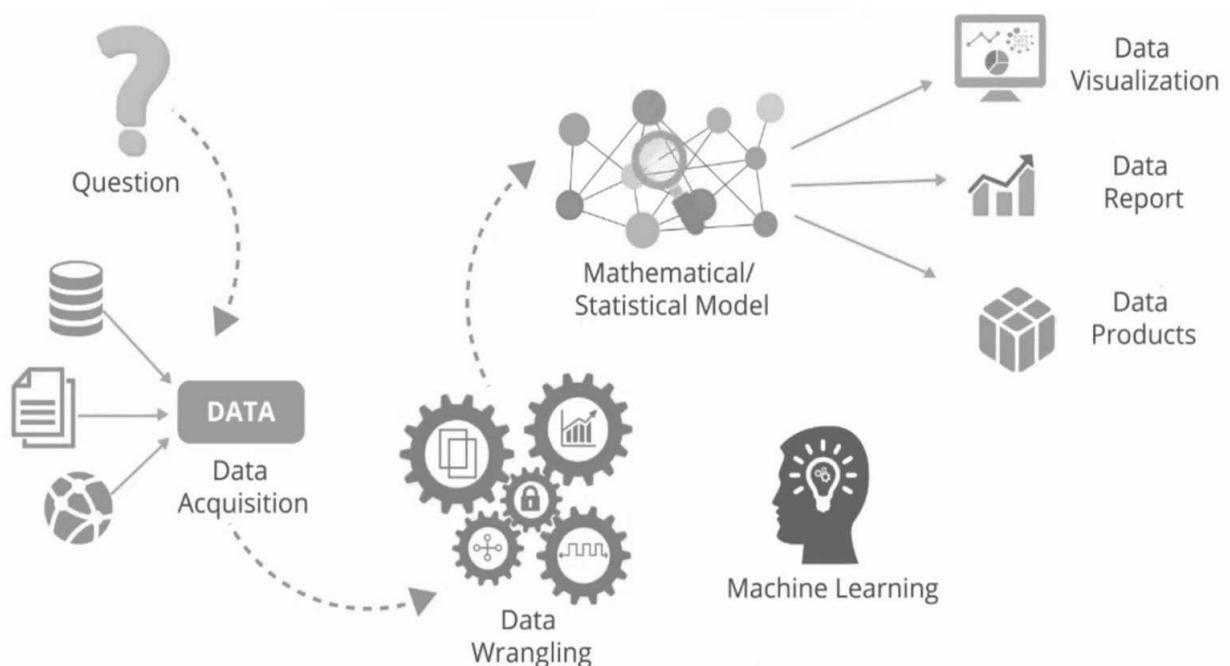
- filtering at source
- Explain sort
- **Sets and Groups**
- Define Groups
- Define Sets
- Join Data using Sets
- **Calculated Fields**
- Introduction to Calculated Fields
- Define Table Calculations
- Define Date Calculations
- Define String Calculations
- Define Logical Functions
- Define Aggregation and Deaggregation
- **Data Blending and Data Refresh**
- Define Data blending
- Define Data Refresh
- Explain joins
- aspects of Data Refresh
- **Actions**
- Explain Actions
- Actions using - Filter, Highlight and URL
- **Dashboards**
- Explain dashboards
- How to create a dashboard
- Dashboard formatting
- Actions in Dash Boards
- How to perform navigation in dashboards.
- **Parameters and Custom Fields**
- Introduction to Parameters
- Define Calculated fields with Parameters
- Interactive features using Parameter driven fields
- **Report Migration Process**
- Introduction to Environments
- Report Migration Checklist
- Source Data and Data Refresh Needs

d. R Programming

- R Basics
- Numbers, Attributes
- Creating Vector
- Mixing Objects
- Explicit Coercion
- Formatting Data Values
- Matrices, List, Factors, Data Frames
- Missing Values, Names
- Reading and Writing Data
- Using Dput/DDump
- Interface to the Outside world
- Sub setting R objects
- Vectorized Operations
- Dates and Times

- **Managing Data Frames with the DPLYR**
- **package**
- **Control Structures**
- **Functions**
- **Lexical/Dynamic Scoping**
- **Loop Functions**
- **Debugging**
- **Data Visualization in R**
- **Storytelling with Data**
- **Principle tenets**
- **Elements of Data Visualization**
- **Infographics vs Data Visualization**
- **Data Visualization & Graphical functions in R**
- **Plotting Graphs**
- **Customizing Graphical Parameters to improve the plots**
- **Various GUIs**
- **Spatial Analysis**
- **Other Visualization concepts**

Additional Support – Interview Questions, Sample Resumes, Resume Building Assistance and Live Projects





About Trainer

CSR having 18 + of exp.
in IT Industry.

He completed B.Tech from
NIT Warangal. He gave a paper presentations in
IIT Mumbai, IIT Chennai, He got a training 15 years of
experience in different platforms and trained Many Students,
CSR is a Microsoft Certified trainer

Our Students Are Placed In