



DATA SCIENCE

- Data Science is the study of data, where we apply statistical techniques and extract insights from the data which helps organizations in better informed decision making.

Course Content

• Introduction to Data science

- Why? What? How?. Role and Responsibilities of Data Analyst
- Data science vs Data Analyst vs Data engineer

• Introduction to Excel.

- Introduction
- Data Preparation & Data Modules Fundamentals
- Data Preparation & Visualization
 - Advanced-Templates,R scripting Tooltips
- Intermediate Data Transformation
 - Parameters & Functions
- Intermediate Inter Active Visualization
 - DAX - The Essentials
- Intermediate Data Transformation
 - DAX - Advanced
- Intermediate Inter Active Visualization
- Advanced Visualization

• SQL

- Introduction & Installation
- DDL - Create, Alter, Drop & Truncate
- DML - Insert, DQL - Select
- DML - Update, Delete, Where Clause, Import Data, Export Data
- Operators - Arithmetic, Comparison, Logical - And, Or, Not
- Operators - Between, Like, Wildcard, RegExp Is Null, Is Not Null In, Distinct, Limit
- Aggregate Function - SUM, MIN, MAX, COUNT, AVG, ROUND, STD, SQUARE, POWER, FLOOR, CEILING
- Order By, Group By, Having, Alias, Clone Table, Views, Subquery, Handling Duplicates
- Date Function - CURDATE, ADDDATE, ADDTIME, CURTIME, DATE_FORMAT, NOW, MONTH, MONTHNAME, DAY, EXTRACT, DAY, DAYOFMONTH, DAYOFWEEK, DAYOFYEAR,, DATEDIFF
- Joins - Inner Join, Left Join, Right Join Using Function
- TCL - SavePoint, Rollback, Commit Constraints - Primary Key, Foreign Key, Null, Not Null, Unique, Auto_Increment
- DCL - Grant, Revoke Create User, Alter User, Drop User
- Store Procedure, Index, SQL Injection, Windows Function

Power BI

Topics

Understanding Power BI
Download & Install
The Three Views In Power BI
Important: Initial Settings
Query Editor - Basic data cleaning
Working with the attached project files
Edit rows & columns, Data Types, Replacing Values, Replace & Edit rows

Data Preparation & Data Modules Fundamentals
Extracting values, Split columns, Text operations, Numerical operations
Creating relationships (data model)
Stacked column chart & Pie chart

Data Preparation & Visualization
Append Queries, Merge & Group, Dates & Hierarchies, Line Chart
Files from a folder, Fact-Dimension model, Edit relationships & cardinality
Activate & deactivate relationships
Manage & autodetect relationships

Intermediate Data Transformation
Tables, Customizing tables, Merging Queries, Unpivot & Pivot & Many-to-Many Relationship,
Filter Visual

Intermediate Interactive Visualization
Filters Pane, Top N Filter, Sync Slicers, Treemap
Visuals, Edit interactions, Drillthroughs, Keep filters with drill through, Tooltips
Custom column, Enable & Disable Load, References vs. Duplicates. Columns from example

Advanced Visualization
Visual Header & Sorting, Conditional Columns, Maps, filled maps, Forecast
Drill Through with Button, Bookmarks, Top products, Cards, Multi Row Cards

Power BI

Topics

Parameters & Functions

Get data from a web page, Use parameters with a web page

Understanding Calculated Columns, Understanding,
Measures AVERAGE, COUNT, DISTINCT COUNT, COUNTROWS
SUM, AVERAGEX & ROUND

RELATED & Data Model, CALCULATE, Filter problems

FILTER

Logical operators

DAX - Advanced

ALL

ALL on columns

ALL EXCEPT

ALL SELECTED

DATEADD

Year-to-Date & Month-to-Date

ROUNDING functions

FORMAT



DATA SCIENCE

• Python

1. Introduction to Python for Data Science
2. Install and Write Your First Python Code
3. Introduction to Jupyter Notebook And Jupyter Lab
4. Keywords And Identifiers
5. Python Comments
6. Python Variables
7. Rules and Naming Conventions for Python Variables
8. Integer & Floating Point Numbers
9. Complex Numbers
10. Strings
11. LIST
12. Tuple
13. Set
14. Dictionary
15. Range In Python
16. List Comprehension
17. Input() Function In Python
18. Arithmetic Operators
19. Comparison Operators
20. Logical Operators
21. Bitwise Operators
22. Assignment Operators
23. Special Operators
24. Membership Operators
25. If Statement
26. If...Else Statement
27. Elif Statement
28. For loop
29. While loop
30. Break and Continue Statement
31. User Define Functions
32. Arbitrary Arguments
33. Function With Loops
34. Lambda Function
35. Built-In Function
36. Global Variable
37. Local Variable
38. File Handling in Python
39. The Close Method
40. The With Statement
41. Writing To A File In Python
42. Python Modules
43. Renaming Modules
44. The from...import Statement
45. Python Packages and Libraries
46. PIP Install Python Libraries

• PYTHON NUMPY

1. Introduction To Numpy
2. Creating Multi-Dimensional Numpy Arrays
3. Arange Function
4. Zeros, Ones and Eye functions
5. Reshape Function
6. Linspace
7. Resize Function
8. Indexing & Slicing
9. Broadcasting
10. How To Create A Copy Dataset
11. Introduction Creating Matrix

• PYTHON PANDAS

1. Pandas- Series
2. Loc & iLoc
3. Operations On Pandas DataFrame
4. Selection And Indexing On Pandas DataFrame
5. Reading A Dataset Into Pandas DataFrame
6. Adding A Column To Pandas DataFrame
7. How To Drop Columns And Rows In Pandas DataFrame
8. How To Reset Index In Pandas Dataframe
9. How To Rename A Column In Pandas Dataframe
10. Tail(), Column and Index
11. How To Check For Missing Values or Null Values(isnull() Vs Isna())
12. Pandas Describe Function
13. Conditional Selection With Pandas
14. How To Deal With Null Values
15. How To Sort Values In Pandas
16. Pandas Groupby
17. Count() & Value_Count()
18. Concatenate Function
19. Join & Merge(Creating Dataset)
20. Pandas-Join
21. Pandas- Merge





DATA SCIENCE

• DATA VISUALISATION: MATPLOTLIB AND SEABORN

1. Matplotlib Subplots
2. Seborn
3. Scatterplot
4. Correlation
5. Boxplot
6. Pie Chart
7. Heatmap
8. Univariate Plots
9. Bivariate Plots
10. Multivariate Data Visualisation

• MACHINE LEARNING (ML)

1. Introduction To Machine Learning
2. Practical Understanding Of Machine Learning
3. Applications of Machine Learning
4. Machine Learning Life Cycle
5. Setting Up Your Environment for Machine Learning
6. Machine Learning Algorithms
7. How Machine Learning Algorithms
8. Learn Difference Between Algorithm and Model
9. Supervised vs Unsupervised ML
10. Dependent vs Independent Variables

1. Simple LINEAR REGRESSION, Multiple Linear Regression, Polynomial Regression

What is Regression?

Introduction to Linear Regression

Conceptual Understanding of Linear Regression

MSE vs RMSE

2. LOGISTIC REGRESSION ALGORITHM

Regressor Algorithm Vs Classifier Algorithm

Limitations of Linear Regression

3. NAIVE BAYES ALGORITHM (NB)





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What is Regression?

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3. NAIVE BAYES ALGORITHM (NB)

4. K-NEAREST NEIGHBOR ALGORITHM (KNN)

5. SUPPORT VECTOR MACHINE ALGORITHM (SVM)

6. MACHINE LEARNING ALGORITHM PERFORMANCE METRICS

7. OVERFITTING AND UNDERFITTING

8. DECISION TREE ALGORITHM

9. ENSEMBLE TECHNIQUES

Understanding Ensemble Techniques

Difference b/n Random Forest & Decision Tree

Why Random Forest Algorithm

Introduction to Bootstrap Sampling | Bagging

Understanding Bootstrap Sampling

Adaboost

Gradient Boost

Gradient Boosting: An Intuitive Understanding The Mathematics behind Gradient Boosting

Algorithm XGBoost

10. K-MEANS CLUSTERING ALGORITHM

11. HIERARCHICAL CLUSTERING ALGORITHM

12. FEATURE ENGINEERING : MODEL SELECTION & OPTIMISATION (Ridge and Lasso Regression, PCA)

13. SAVING AND LOADING ML MODEL

• WEB SCRAPING FOR DATA SCIENCE

1. Introduction to Web Scraping libraries

2. Request

3. BeautifulSoup





• **Deep Learning (ARTIFICIAL NEURAL NETWORK)**

1. **Introduction To Deep Learning**
2. **What is Artificial Neural Network?**
3. **Neurons and Perceptrons**
4. **Machine Learning vs Deep Learning**
5. **Why Deep Learning**
6. **Applications of Deep Learning**
7. **Neural Network: An Overview**
8. **Components of the Perceptron**
9. **Fully Connected Neural Network**
10. **Types of Neural Networks**
11. **How Neural Networks work**
12. **Propagation: Forward and Back Propagation**
13. **Understanding Neural Network**
14. **Hands-on Forward and Back Propagation**
15. **Optimizers In NN**

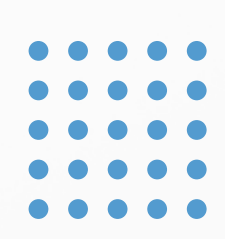
• **Activation Functions**

1. **An Introduction**
2. **Sigmoid Activation Function**
3. **Vanishing Gradient**
4. **TanH Activation Function**
5. **ReLU Activation Function**
6. **Leaky ReLU Activation Function**
7. **SoftMax Activation Function**
8. **Computer Vision**
9. **WORKING WITH IMAGES**
10. **INTRODUCTION TO CONVOLUTIONAL NEURAL Networks**
11. **OBJECT DETECTION**
12. **PERFORMANCE METRICS FOR OBJECT DETECTION**
13. **OBJECTION DETECTION TECHNIQUES**
14. **OPENCV**



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7. OPENCV
8. Natural Language Processing
9. What is NLP?
10. Applications of NLP
11. WORKING WITH IMAGES
12. TEXT PRE-PROCESSING
13. RECURRENT NEURAL NETWORK (RNN)
14. What is a Recurrent Neural Network (RNN)?
15. Types of RNNs
16. Use Cases of RNNs
17. Long-Short Term Memory (LSTM)



• MLOps Overview

1. What is MLOps?
2. MLOps Lifecycle
3. ML Development
4. Model Building and Training
5. Training Operationalisation
6. Model Versioning
7. Model Registry
8. Model Governance
9. Model Deployment
10. Prediction Serving
11. Model Monitoring

• CRISP -DM

What is CRISP-DM

Six sequential Phases of CRISP-DM

1. Business understanding
2. Data understanding
3. Data preparation
4. Modeling
5. Evaluation
6. Deployment

• STATISTICS FOR DATA SCIENCE

1. Introduction to Statistics For Data Science
2. Why Statistics Is Important For Data Science?
3. How Much Maths Do I Need To Know?
4. Types Of Statistics
5. Common Statistical Terms
6. What Is Data?
7. Data Types Data
8. Attributes and Data Sources
9. Structured Vs Unstructured Data
10. Frequency Distribution
11. Central Tendency
12. Mean, Median, Mode
13. Measures of Dispersion
14. Variance and Standard Deviation
15. Example of Variance and Standard Deviation
16. Variance and Standard Deviation In Python
17. Coefficient of Variations
18. The Five Number Summary
19. The Quartiles: Q1 | Q2 | Q3 | IQR
20. Introduction To Normal Distribution
21. Skewed Distributions
22. Central Limit Theorem
23. Introduction to Correlation
24. Scatterplot For Correlation
25. Correlation is NOT Causation
26. Why Probability In Data Science?
27. Probability Key Concepts
28. Mutually Exclusive Events
29. Independent Events
30. Rules For Computing Probability
31. Baye's Theorem
32. Introduction To Hypothesis
33. Null Vs Alternative Hypothesis
34. Setting Up Null and Alternative Hypothesis
35. One-tailed Vs Two-tailed test
36. Key Points On Hypothesis Testing
37. Type 1 vs Type 2 Errors
38. Process Of Hypothesis testing
39. P-Value
40. Alpha-Value or Alpha Level
41. Confidence Level



DATA SCIENCE

- **Capstone Project**

1. Recommendation Engine
2. Sentiments Analyzer
3. Customers Churn

- **Course Details**

sno	Title	Duration	Prerequisite	Required Qualification
1	Data science	90 Hrs	Basic Computer knowledge and passion at solve Business Problems with Data	BE/B.Tech, MBA, MSC/BSC (statistics) or any graduate good in basic math/statistics or ready to learn

