



# Machine Learning And Deep Learning Course

# Course Introduction

- Introduction of Data science and its application in Day to Day life.
- Course overview and Dashboard description.

## Python Core

- Introduction of python and comparison with other.
- Programming language.
- Installation of Anaconda Distribution and other python.
- IDE Python Objects, Number & Booleans, Strings.
- Container objects, Mutability of objects.
- Operators - Arithmetic, Bitwise, Comparison and Assignment operators, Operators Precedence and associativity.
- Conditions(If else,if-elif-else) , Loops(While ,for).
- Break and Continue statement and Range Function.

## String Objects and collections

- String object basics.
- String methods.
- Splitting and Joining Strings.
- String format functions.
- List object basics  
list methods.
- List as stack and Queues.
- List comprehensions.


# Tuples,Set, Dictionaries & Functions

- Tuples, Sets, Dictionary Object.  
basics, Dictionary Object methods, Dictionary View Objects.
- Functions basics, Parameter passing, Iterators.  
Generator functions.
- Lambda functions.
- Map, Reduce, Filter functions.

# OOPS concepts & Working with Files

- OOPS basic concepts.
- Creating classes and Objects Inheritance.
- Multiple Inheritance.
- Working with files.
- Reading and writing files.
- Buffered read and write.
- Other File methods.

# Exception Handling & Database Programming

- Using Standard Module.
  - Creating new modules.
  - Exceptions Handling with Try-except.
  - Creating ,inserting and retrieving Table.
  - Updating and deleting the data.
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## Visualization

- Flask introduction.
- Flask Application.
- Open linkFlask .
- App RoutingFlask.
- URL BuildingFlask.
- HTTP MethodsFlask.
- TemplatesFlask .
- Django end to end.

## Database

- Mongo DB SQL .
- Lite python SQL.


## Python project

- Web crawlers for image data sentiment analysis and product review sentiment analysis.
  - Integration with web portal.
  - Integration with rest a\Api ,Web portal and Mongo DB on Azure .
  - Deployment on web portal on Azure.
  - Text mining.
  - Social media data churn.
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## Python pandas Modules ,

- Python Pandas - Series .
- Python Pandas – DataFrame.
- 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 Statistical Functions.
  - Python Pandas - Window Functions.
  - Python Pandas - Date Functionality.
  - Python Pandas – Timedelta.
  - Python Pandas - Categorical Data Python Pandas – Visualization Python Pandas - IO Tools.
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# Python Numpy

- NumPy - Ndarray Object.
  - NumPy - Data Types .
  - NumPy - Array Attributes.
  - NumPy - Array Creation Routines.
  - NumPy - Array from Existing .
  - Data Array From Numerical Ranges.
  - NumPy - Indexing & Slicing .
  - NumPy – Advanced Indexing.
  - NumPy – Broadcasting.
  - NumPy - Iterating Over Array.
  - NumPy - Array Manipulation.
  - NumPy - Binary Operators.
  - NumPy - String Functions.
  - NumPy - Mathematical Functions.
  - NumPy - Arithmetic Operations.
  - NumPy - Statistical Functions.
  - Sort, Search & Counting Functions.
  - NumPy - Byte Swapping.
  - NumPy - Copies & Views.
  - NumPy - Matrix Library.
  - NumPy - Linear Algebra.
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## Exploratory Data Analysis

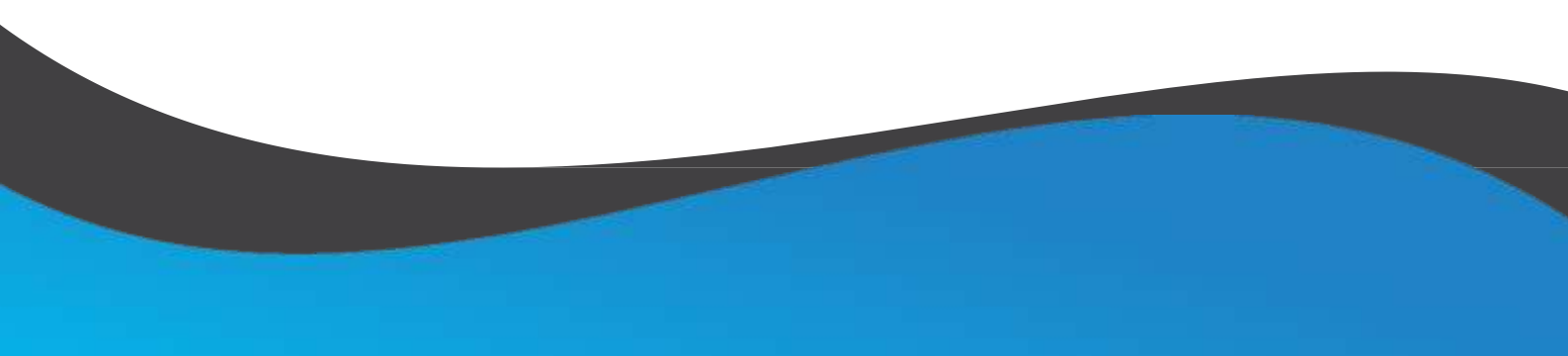
- Feature Engineering and Selection .
- Building Tuning and Deploying Models.
- Analyzing Bike Sharing Trends.
- Analyzing Movie Reviews Sentiment.
- Customer Segmentation and Effective Cross Selling.
- Analyzing Wine Types and Quality.
- Analyzing Music Trends and Recommendations.
- Forecasting Stock and Commodity Prices.

## Statistics

- Descriptive Statistics.
- Sample vs Population statistics.  
Random Variables.
- Probability distribution function.  
Expected value.
- Binomial Distribution.
- Normal Distribution z-score.
- Central limit Theorem.
- Hypothesis testing Z-Stats vs T-stats.
- Type 1 type 2 error
- Confidence interval

- Chi Square test .
- ANOVA test.
- F-stats.

## Machine Learning 1

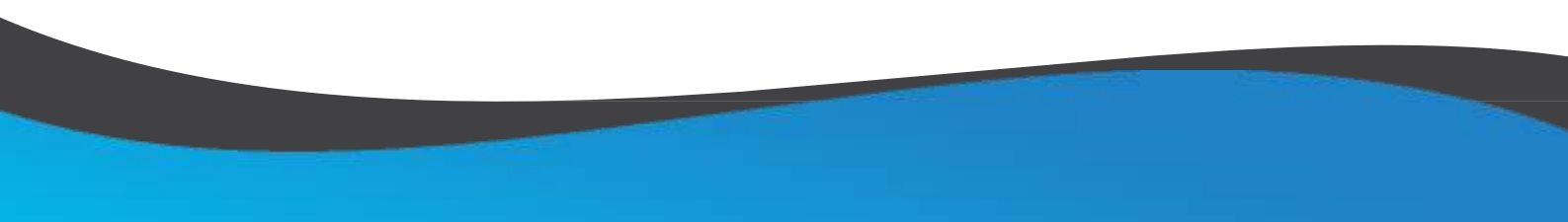
- Introduction.
  - Supervised, Unsupervised, Semi-supervised, Reinforcement
  - Train, Test, Validation Split.
  - Performance Overfitting, underfitting OLS.
  - Linear Regression assumption.
  - R square adjusted.
  - R square Intro to Scikit learn.
  - Training methodology.
  - Hands on linear regression.
  - Ridge Regression.
  - Logistics regression.
  - Precision Recall ROC  
curve.
  - F-Score.
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## Machine Learning 2

- Decision Tree Cross.
- Validation Bias vs Variance.
- Ensemble approach Bagging.
- Boosting Random.
- Forest Variable Importance.


## Machine Learning 3

- XGBoost.
  - Hands on XgBoost.
  - KNearest Neighbour.
  - Lazy learners.
  - Curse of Dimensionality.
  - KNN Issues.
  - Hierarchical clustering K-Means.
  - Performance measurement.
  - Principal Component analysis.
  - Dimensionality reduction.
  - Factor Analysis.
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## Machine Learning4

- SVR..
- SVM.
- Polynomial Regression.
- Ada boost.
- Gradient boost.
- Gaussian mixture.
- Anamoly detection.
- Novelty detection algorithm
- Stacking.
- K-NN regressor.
- Decisson tree regressor
- DBSCAN.


## Natural Language Processing

- Text Ananlytics.
  - Tokenizing, Chunking.
  - Document term.
  - Matrix TFIDF.
  - Sentiment analysis hands on.
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# Spark

- Spark overview.
  - Spark installation.
  - Spark RDD.
  - Spark dataframe.
  - Spark Architecture.
  - Spark ML lib.
  - Spark Nlp.
  - Spark linear regression.
  - Spark logistic regression.
  - Spark Decision Tree.
  - Spark Naive Bayes.
  - Spark xg boost .
  - Spark time series.
  - Spark Deployment in local server
  - Spark job automation with scheduler.
- 


# Deep Learning

- Deep Learning Introduction.
  - Neural Network Architecture.
  - Loss Function.
  - Cost Function.
  - Optimizers.
  - CNN architecture.
  - Build First Classifier in CNN.
  - Deploy Classifier over cloud.
  - RNN overview.
  - GRU.
  - LSTM.
  - Time Series using RNN LSTM.
  - Customer Feedback analysis using RNN LSTM.
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# Chatbot Project

- Chatbot using Microsoft Luis.
- Chatbot using google Dialog flow .
- Chatbot using Amazon Lex..
- Chatbot using Rasa NLU.
- Deployemnt of chatbot with web , Telegram , Whatsapp, Skype.

# Time Series

- Arima .
  - Sarima .
  - Auto Arima
  - Time series using RNN LSTM .
  - Prediction of NIFTY stock price.
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## Machine learning project

- Healthcare analytics prediction of medicines based on FIT BITband.
  - Revenue forecasting for startups.
  - Prediction of order cancellation at the time of ordering inventories.
  - Anamoly detection in inventory packaged material.
  - Fault detection in wafferes based on sensordata.
  - Demand forecasting for FMCG product.
  - Threat identification in security system.
  - Defect detection in vehicle engine.
  - Food price forecasting with Zomato dataset.
  - Fault detection in wafferes based on sensor data.
  - Cement\_Strength\_ reg.
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- Credit Card Fraud.
- Forest\_Cover\_Classification.
- Fraud Detection.
- Income Prediction.
- Mushroom classifier., Phishing Classifier ,Thyroid\_Detection.
- Visibility climate.


## Deep Learning projects

- Customer Feedback analysis using RNN LSTM.
- Family member detection.
- Industry financial growth prediction.
- Speech recognition based attendance system.
- Vehicle Number plate detection and recognition system.

## Deployment

- Deployment of all the project In cloudfoundary , AWS , AZURE and Google cloud platform.
- Expose, api to web browser and mobile application retraining approach of Machine learning model.
- Devops infrastructure for machine learning model.
- Data base integration and scheduling of machine learning model and retraining custom machine learning training approach.
- AUTO ML.
- Discussion on infra cost and data volume.
- Prediction based on streaming data.


## Extra session

- Discussion on project explanation in interview.
  - Data scientist roles and responsibilities.
  - Data scientist day to day work .
  - Companies which hire a data scientist.
  - Resume discussion with our team one to one.
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- Vehicle number plate detection and recognition system.

## Tableau and power Bi self placed session

- Business Intelligence (BI) Concepts.
  - Microsoft Power BI (MSPBI) introduction.
  - Connecting Power BI with Different Data sources.
  - Power Query for Data Transformation.
  - Data Modelling in Power BI.
  - Reports in Power BI Reports and Visualisation types in Power BI.
  - Dashboards in Power BI.
  - Data Refresh in Power BI.
  - Traditional Visualisation(Excel) vs Tableau.
  - About Tableau.
  - Tableau vs Other BI Tool Pricing.
  - At the End of this course.
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## Projects

- Project 1. Project Sales.
- Project 2. Financial Report.
- Project 3. HealthCare.
- Project 4. Procurement Spend Analysis.
- Project 5. Human Resource.

## Tableau Interview Questions.





Thank you