

Data Science

(1) Python Basics (Conditional, loops, Data Structures, functions)

(2) Python Advance (File handling, OOP, Lambda, LC, DC, SC, Decorators, etc)

(3) Data Analysis (NumPy, Pandas,)

(4) Data Visualization (Matplotlib, Seaborn, Plotly and cufflink)

(5) SQL and NoSQL (MySQL, MongoDB)

(6) RestAPI, → Flask, Django, fastAPI

(7) Statistics →

(1) Descriptive Stats.

(2) Inferential Stats.

(3) Mean, median and mode.

(4) Standard deviation and Variance

(5) Probability Density Function.

(i) Normal Distribution.

(ii) Poisson's Distribution.

(iii) Uniform Distribution

(iv) Binomial Distribution.

(v) Student t-distribution

(vi) Bernoulli Distribution-

(6) Hypothesis Testing -

(7) z-test

(8) t-test

(9) Chi-Square test

(10) ANOVA, F-Score

(11) AB Testing.

(12) Central Limit theorem.

(13) Estimation problems.

(14) P-value

(8) Differential Calculus

(i) Derivative

(ii) Partial Derivatives

(iii) Product Rule

(iv) Quotient Rule.

(v) Chain Rule.

(9) Linear Algebra

(i) Eigen Value

(x_{ij}) Eigen Vector
(z_{ei}) Matrix

10) Machine Learning

(i) Introduction to AI

(ii) Linear Regression

(a) Gradient Descent

(b) Ridge, Lasso, Elastic Net

(c) Multiple Regression.

(d) Polynomial Regression.

(e) Cost / loss function

(f) Multi-collinearity

(g) Correlation - Matrix

(h) VIF

(iii) Logistic Regression.

(a) Confusion Matrix

(b) Accuracy, Recall, Precision

(c) F1 score, ROC and AUC

(iv) Decision Tree

→ Entropy, Information Gain

→ Gini Indexing

→ Hyperparameter tuning

- Grid Search

- Random Search

→ Cross Validation
 → Hold out
 → K-fold
→ Tree Pruning
 → Post Pruning
 → Pre Pruning

(Vi) Ensemble Technique

→ Bagging
→ Boosting
→ Stacking
→ Pastting

(Vii) Random Forest

→ Stacking Generalization -

(Viii) Ada Boost (Adaptive Boosting)

(ix) Gradient Boost

(x) XGBoost (Extreme Gradient Boost)

(xi) K-NN (K-Nearest Neibours)

(xii) Clustering

→ Agglomerative
→ Divisive

(xiii) K-Mean Clustering

(Xiv) Hierarchical Clustering

(Xv) DBSCAN (Density Based Spatial
clustering of Applications
with Noise)

(Xvi) PCA (Principal Component Analysis)

→ EVR.

→ Eigen - Decomposition.

→ Covariance

(Xvii) SVM (Support Vector Machine)

→ SVC

→ SVR

(Xviii) Naive Bayes classifier

→ Gaussian Naive Bayes

(Xix) Time Series

→ Arima

→ Sarima

→ Moving average

Deep Learning

ANN \rightarrow Artificial Neural Network

Basics of Neural Network

Cost function.

Gradient descent

Optimizers.

Back-propagation

Tensorflow - In depth

(TF 1.0, TF 2.0)

CNN \rightarrow Convolutional Neural Network

Explanation end-to-end

CNN training

CNN - Architectures (Advanced Computer Vision)

LeNet

AlexNet

Inception v3

ResNet

VGG

Fast R-CNN

SSD

Mask R-CNN

Discussion

writing

Research

Papers

and

Implementation

using

N

Day -

pretrained Model
Faster RCNN
Tensorflow Object Detection
(TFOD)

YOLO V1, V2, V3

GRU setup and training .

Face Net

Introduction to Pytorch

Word Embedding

→ Word2Vec

→ TFIDF

RNN (Recurrent Neural Networks)

→ LSTM

→ Bi-LSTM

→ GRU Implementation

Attention Based Models .

→ Seq2Seq

→ Encoders and decoders

→ Attention Neural Networks
→ Self Attention

Transfer Learning in NLP

→ Transformers

→ BERT

→ GPT 1

→ GPT 2

→ ELMo

→ ALBERT

→ DistilBERT

Text Processing [NLP]

→ Text Normalisation

→ Frequency Distribution

→ String Tokenization

→ Annotator

→ POS tagging

→ NER

→ Lemmatization in Text Processing

→ Sentiment Analysis

Deployment.

→ AWS - EC2, Elastic Beanstalk.

→ AZURE

→ GCP

→ HEROKU