Data Science Curriculum

Course Overview:

Learn A-Z everything about Data Science From the basic to advanced.

What You Will Learn:

- ❖ Basic fundamentals of Data science, Machine learning, Computer vision, Natural language processing.
- ❖ Data exploration, data preprocessing, handling missing values.
- ❖ Feature engineering and exploratory data analysis.
- ❖ Data visualization techniques.
- ❖ Descriptive and inferential statistics, probability.
- ❖ Working with Tableau and Power BI.
- ❖ Cross – validation techniques.
- ❖ Model selection, model training, model evaluation and model prediction.
- ❖ Supervised learning, Unsupervised learning and Reinforcement learning.
- ❖ Regression, Classification, Clustering, Association rules.
- ❖ Linear regression, Logistic regression, Support vector machine, Naïve bias algorithm, Decision tree, Random forest, K-nearest neighbors and others .
- ❖ Ensemble learning – bagging and boosting.
- ❖ K-means, DBSCAN, Hierarchical clustering.
- ❖ Content based filtering and Collaborative filtering.
- ❖ Recommendation system and its working process.
- ❖ AdaBoost, XGboost, Catboost, Gradient boosting, etc..
- ❖ Deep learning and Neural networks.
- ❖ Perceptron, Artificial neural networks, Feed forward neural network.
- ❖ Back-propagation algorithm.
- ❖ Weights, bias and tradeoff.
- ❖ Overfitting and underfitting.
- ❖ Activation functions, optimizers and loss / cost functions.
- ❖ Epochs, step per epochs, batch size, val epochs, learning rate, etc.
- ❖ Image and video processing with OpenCV and Mediapipe libraries.
- ❖ Data augmentation and data annotation.
- ❖ CNN architecture, hyper parameter tuning and transfer learning.
- ❖ Generative adversarial networks.
- ❖ Image classification, Object detection, Image segmentation, Face recognition, Pose estimation, Face generation, Image filtering, Art and Painting generation etc.
- ❖ NLP components – Natural language understanding and Natural language generation.
- ❖ NLP phases - lexical / morphological analysis, Syntactic analysis, Semantic analysis, Disclosure integration, Pragmatic analysis, Word Sense Disambiguation.
- ❖ Various text preprocessing and feature extraction techniques.

- ❖ Recurrent neural networks (RNN), LSTM, GRU, Encoder and Decoder, Transformers and Hugging face transformers.
- ❖ Text classification, Text summarization, Text paraphrasing, Grammar correction, Language modeling, Topic modeling, Text generation, Question and Answer generation, Generation, Chatbots, Text translation.
- ❖ Project management, development and deployment.
- ❖ Web scraping techniques.
- ❖ API development using FASTAPI framework.
- ❖ Working with Sklearn, TensorFlow, Pandas, Numpy, Matplotlib, Seaborn, Plotly.
- ❖ Hands on experience in real world projects.
- ❖ Machine learning interview questions.
- ❖ Machine learning mock interview preparation.
- ❖ Helping resume creation.

Requirements:

- ❖ Carry your own laptop with decent configurations.
- ❖ Knowledge about Python programming language.

Syllabus:

Section	Topic
1	Introduction of Course
2	Fundamental of Machine Learning
3	Data exploration & Feature engineering techniques
4	Statistical techniques
5	Data Visualization
6	Supervised Learning
7	Ensemble Learning
8	Unsupervised Learning
9	Reinforcement Learning
10	Deep Learning
11	Fundamental of Computer Vision
12	Image Processing with OpenCV
13	Video Processing with OpenCV
14	Working with Mediapipe
15	Data Augmentation
16	Data Annotation
17	Introduction of Convolutional Neural Network (CNN)
18	Transfer Learning
19	Object Detection
20	Image Segmentation
21	Generative Adversarial Network (GANs)