Data Science Boot Camp

MLWithAP

WHY SHOULD YOU JOIN ?

- Rigorous 5 months industry focused bootcamp

- Two Real-life end to end projects.

- Mock interviews, Resume review, LinkedIn profile building included.
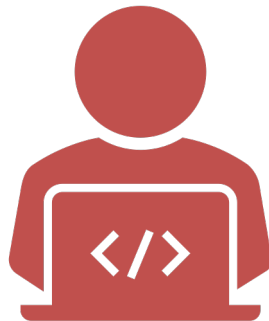
- Live Online Program [4 hours every weekend]

- Real time doubt clearance over Slack/telegram.

Pre-requisite

No Pre-requisite needed. Experience with any programming language is desirable but not mandatory.

Laptop or Desktop with 8 GB+ RAM (Win or Mac) and good internet connection.

CURRICULUM

Foundation Module

- Introduction to Data Science
- Data Science Landscape
    - Brief History of Artificial Intelligence
    - Current State of Data Science and future growth.
    - Difference between Artificial Intelligence, Machine Learning & Data Science
    - Types of Machine Learning (Supervised, Unsupervised, Semi-supervised, Reinforcement)
- Introduction to End-to-End Data Science project Lifecycle

- Introduction to Python Fundamentals
    - Python Introduction
    - Python and Anaconda / Jupyter Installation
    - Jupyter and Anaconda Walkthrough
    - Syntax and Semantics
    - Data Structures

Foundation Module

- Python Flow Control
- Python Functions
- Python List Comprehensions and Generators
- Python Regular Expression
- Python File and IO operations
- Python Exception Handling
- Python Useful Modules

- Advance Python for Data Science
  - Deep dive NumPy
  - Deep dive Pandas
  - Matplotlib & Seaborn – Visualization
  - Other Important DS Modules and Packages (Plotly, Flask)

Foundation Module

- Mathematics for Data Science
  - Statistics
    - Descriptive Statistics
    - Inferential Statistics
  - Linear Algebra
  - Calculus
    - Differential
    - Integral
  - Probability

- SQL for Data Science
  - Data Analysis using SQL (MySQL) and NoSQL (MongoDB)

Machine Learning (Module 1)

- Exploratory Data Analysis
  - Univariate, Bivariate and Multivariate Analysis.
  - Outliers and Anomalies detection.
  - Data Cleansing - Null value, Imputations, Duplicate treatment.
  - Statistical Analysis of Data.
  - Sampling technique and Stratification Strategy.
  - Bias and Variance.
  - Handling Bias and Imbalance.
  - Visualization of Data for EDA

- Data Visualization
  - Data Visualization using Tableau

Machine Learning (Module 1)

- Introduction to Machine Learning
  - Machine learning Landscape
  - Machine learning end to end project lifecycle
  - Supervised, Unsupervised, Semi-supervised and Reinforcement Learning Overview.
  - Linear Regression
  - Multi Variable Linear Regression
  - Logistic Regression
  - Introduction to Scikit learn Package
- Feature Engineering and Feature Selection
  - Feature Engineering
    - Feature creation
    - Feature transformation
    - Feature Extraction
    - Feature Selection

Machine Learning (Module 1)

- Feature Selection
    - PCA
    - Dimensionality Reduction techniques
    - Multicollinearity
    - Forward/Backward/Stepwise selection
    - Lasso
    - Filter/Wrapper/Embedded
- Feature Scaling
    - Standardization
    - Normalization

Adv Machine Learning (Module 2)

- Advanced Supervised Learning
  - Naïve Bayes
  - k-NN
  - Support Vector Machines
  - Ridge , Lasso and Elastic Regression
  - Tree and Ensemble Models
    - Decision Trees
    - Random Forest
    - Bagging
    - Boosting
    - XGBoost
  - Model Selection and Tuning
  - Hyper Parameter Tuning

Adv Machine Learning (Module 2)

- Model Performance measures
- Bias and Variance tradeoff
- Overfitting vs Underfitting
- Cross validation
- GridSearchCV Vs RandomizedSearchCV
- Regularization – L1 and L2
- Pipelining

- Unsupervised Learning
    - KMeans Clustering
    - PCA
    - Hierarchical Clustering
    - Anomaly detection

Adv Machine Learning (Module 2)

- Gaussian Mixture Model
- DBSCAN
- t-SNE

- Time Series Analysis

- Association and Recommender systems

- MLOps (Machine Learning Operations for Production)
  - Need for MLOps and Key Concepts
  - ML Pipeline - Data and Model Pipelines
  - Model Monitoring and Performance Tracking
  - AWS Sagemaker - End to end Deployment Demo

Deep Learning (Module 3)

- Neural Network and Deep Learning Fundamentals
  - Introduction to Deep Learning
  - Perceptron, Activation and loss function
  - Backpropagation
  - Gradient Descent
  - Optimizers
  - Batch Normalization
  - Introduction to TensorFlow and Keras
- Computer Vision
  - Overview of CNN
  - Convolution, Pooling and Padding
  - CNN architectures and ImageNet Challenge
  - Object Detection
  - Image Segmentation

Deep Learning (Module 3)

- Natural Language Processing
    - RNNs and Sequence Models
    - Tokenization, Stemming and Lemmatization
    - LSTMs and GRUs
    - Attention Model and Transformer Architecture
    - Advance Language Models – BERT, GPT3 , ChatGPT

- AI, DL, Explainability and Ethics

Interview Readiness (Module 4)

- Interview Readiness
  - Interview Tips
  - 2 Mock Interviews.
  - Bank of typical Interview Questions.
  - How to handle Behavioral and Managerial round questions.
  - How to explain end-to-end project to interviewer.
  - Guidance on Resume Preparation.
  - Guidance on LinkedIn Profile build.
    - Networking on LinkedIn
    - Tips to engage and get noticed on LinkedIn.

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