Data Science & Data Analytics

- Introduction to Python
- Python fundamentals
- Python Core, Strings, Packages, Operators, Loops, Functions
- String Objects and Collection
- Tuples, Set, Dictionaries & Functions
- Data Manipulation: Cleansing - Munging
    - Cleansing Data with Python
    - Filling missing values using lambda function and concept of Skewness.
    - Data Manipulation
- Python Pandas
- NumPy
- SciPy
- Scikit-learn
- Seaborn
- Matplotlib
- Data Analysis: Visualization Using Python
    - Introduction exploratory data analysis
    - Descriptive statistics, Frequency Tables and summarization
    - Univariate Analysis (Distribution of data & Graphical Analysis)
    - Bivariate Analysis (Cross Tabs, Distributions & Relationships, Graphical Analysis)
    - Creating Graphs- Bar/pie/line chart/histogram/ boxplot/ scatter/ density etc)
- Introduction to Statistics and Mathematics in AI
    - Statistical Data Types
    - Measure of Central tendency, Dispersion and Association
    - Estimation and Hypothesis Testing
    - Distributions
    - Sampling techniques

- Machine learning
  - Supervised Machine Learning techniques – what is it?
  - How to build a model
  - EDA
  - Train, Test & Validation splits
  - Predictions
  - Over Fitting & Under Fitting
  - Intro to Scikit learn
- Linear Regression
  - Theory
  - Simple and Multiple Linear Regression
  - Assumptions
  - R-square & Adjusted R-square
  - MSE, RMSE, MAE, MAPE
  - Hands-on: Predict Numbers (discrete / continuous)
- Logistic Regression
  - Theory
  - Confusion matrix
  - Precision Recall
  - Sensitivity
  - Specificity
  - ROC-Curve
  - F-score
  - Hands-on: Predict a binary class
- Unsupervised/Clustering
  - K-means
  - Case Study on the Teen marketing segmentation and targeting the customers
- Introduction of Decision Tree and Random Forest
- Application of Image processing
  - Image processing with MLP (Multi-layer perceptron)
  - Case study on the Spam Filter

- NLP (Natural Language Processing)
    - Sentiment Analysis
    - TF-IDF
    - Term Document Matrix
- Deep Learning
    - Activation Function
    - Cost function
    - Gradient descent
    - SGD
    - Cross validation
    - Drop Out of neurons
- Project
- Assignments
- Master classes
- Quizzes