Artificial Intelligence and Machine Learning with Python

- Python (8 hrs)
  - Basic Data Types
    - Numerical Types
      - Integer
      - Floats
      - Complex
      - Booleans
    - Natively Implemented Arithmetic Operations
    - Containers
      - Lists
      - Sets
      - Tuples
    - String
    - Dictionaries
  - Working with Assignment Operator
  - Control Flow
    - If
    - Elif
    - Else
    - For / Range
    - While / Break / Continue
  - Advanced Iteration
  - Functions
    - Function Definition
    - Return Statement
    - Parameters

- Numpy for Machine Learning (3 hrs)
  - Importing Conventions
  - Creating Arrays
    - 1-D Array (Dimension & Shape)
    - 2-D and 3-D Array
  - Functions for Creating Arrays
    - Evenly Spaced
    - Number by Points
  - Common Arrays
    - Zeros
    - Ones
  - Basic Data type
  - Indexing and Slicing

- Matplot for Machine Learning (4 hrs)

- Importing Convention
- Simple Graph
- Plot Function & Show Function
- Title of Graph
- X and Y Label
- Adding another co-ordinate
- Working with Legends
- Changing colors and line width
- Types of Plot
    - Regular Plot
    - Scatter Plot
    - Bar Plot

- Pandas for Machine Learning (4 hrs)
    - Importing Conventions
    - Creating Series and DataFrane
    - Functions for Creating and Manipulating
        - Series
        - DataFrame
    - Importing CSV and Excel Sheets
    - Performing Operations on CSV and Excel Sheets

- Intro to Artificial Intelligence(12 hr)
    - What is Artificial Intelligence
    - History of AI
    - Application of Machine Learning
    - Necessary Conditions of AI
        - Should act like human
        - Should think like human
        - Should think rationally
        - Should act rationally
    - Total Turing Test
    - Knowledge Representations
    - Rational Agents
    - Goal of AI

- Intro to Machine Learning (1 hr)
    - What is machine learning
    - Application of Machine Learning
    - Types of Machine Learning
    - Supervised Machine Learning
    - Unsupervised Machine Learning
    - Reinforcement Learning

- Key Machine Learning Terms (1 hr)
    - Data
    - Data types
    - Record
    - Data Set
    - Structured Data
    - Unstructured Data
    - Data Exploration
    - Data Mining
    - Descriptive Analytics
    - Predictive Analytics
    - Training Data
    - Test / Evaluation Data

- Linear Regression Algorithm (5 hrs)
    - Understanding Theory of Algorithm
    - Maths behind Algorithm
    - Practical Implementation

- Logistic Regression Algorithm (5 hrs)
    - Understanding Theory of Algorithm
    - Maths behind Algorithm
    - Practical Implementation

- Decision Tree Algorithm (5 hrs)
    - Understanding Theory of Algorithm
    - Maths behind Algorithm
    - Practical Implementation

- Neural Network Algorithm (8 hrs)
    - Understanding Theory of Algorithm
    - Maths behind Algorithm
    - Practical Implementation

- Doubt Clearing Session (8 hrs)