Python & Machine Learning Contents

Day 1:

- Introduction to python
- Need for python
- Basics :
  - Environment Setup
    - Installation of Python
    - Installation of conda/miniconda
    - Installation of JupyterLab

Day 2:

- Python Data Structure
  - Basic Variables
  - Advanced Variables
  - Variable assignments
  - File I/O
- Operators
- Conditional statements
  - If..else, If..else, if..elif..else
  - switch

Day 3:

- Loops
  - While
  - For
  - do...while
- Break and continue
- Functions
- Object Oriented Programming in Python (Basics)

Day 4:

- Introduction to Machine Learning and Artificial Intelligence
- Difference between AI , ML, Deep learning
- Use cases of these technologies
- Why python is booming language now-a-days
- Introduction of Python and python libraries as a tool for ML/AI
- Concepts of Artificial Intelligence
  - What is AI
  - Uses of AI in day to day life
- Concepts of Machine Learning
  - What is ML
  - Types of ML
    - Supervised learning
    - Unsupervised learning
    - Semi-supervised learning.
    - Reinforcement Learning
- List of Python libraries:
  - Introduction Anaconda and Use cases
  - EDA - Exploratory Data Analysis
  - Pandas
  - Numpy
  - scipy(useful for image manipulation)
  - Matplotlib
  - Scikit-learn

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Day 5:

- Machine Learning (Theory)
  - Introduction
  - Linear Regression
  - Cross validation and Bias variance trade off
  - Logistic Regression
  - KNN Theory
  - Decision Trees, Random Forests
  - Support Vector
  - K Means
- Practical:
  - Demo of image processing
    - Image processing : Python > OpenCv > numpy > matplotlib > tesseract

Day 6:

- Class on Numpy
  - Introduction to Numpy
  - Numpy Arrays
  - Numpy Array Indexing
  - Numpy Operations
- Class on Pandas
  - Introduction to Pandas
  - Panda Series
  - Dataframes (Important & vast)
  - Missing data

- Groupby
- Merging Joining and Concatenating
- Operations
- Data I/O
- Class on Matplotlib
  - Introduction to Matplotlib
  - General Concepts
  - Pyplot
- Practical:
  - Data analysis using Numpy and Pandas (Practical)
  - Data visualization using Matplotlib, Pandas, Plotly and cufflinks (Practical)
- Practical:
  - Text processing in python(using NLTK library here)
    - Converting in lower case
    - Converting numbers into words in sentences

Python & Machine Learning Contents

Day 7:

- Implementation of python in DevOps
    - Container running Python with Modules in Openshift
    - Running Jupyter in Container
- Explanation on AI/ML concepts using these tools(like computer vision, image processing, natural language processing,etc)
    - OpenCV
    - TensorFlow
    - PyTorch
- Deploying ML on Kubernetes and Openshift
- HPA and ML in DevOps

Day 8:

- Neural Network
    - Neural network - Artificial Neural Networks:
        - ANN Intuition
        - Building an ANN
    - Neural network - Convolutional Neural Networks:
        - CNN Intuition
        - Building an CNN
    - Neural network - Recurrent Neural Networks:
        - RNN Intuition
        - Building an RNN