AI/DS/Python - Adaovi

This course covers various topics, including machine learning, deep learning, natural language processing, and Big Data. The course includes hands-on programming exercises, projects, and case studies, allowing students to gain practical experience in building intelligent systems. The goal of this course is to equip individuals with the knowledge and skills needed to leverage artificial intelligence technologies in various domains and industries.

Session 2.5 hrs	Topics
Day 1	AI Course Introduction - AI in Industry - AI Paradigms - Job opportunities in AI - AI Applications Editors and Environment setup - Jupyter Notebook - Google Colab

Day 2	Python Basics - Part 1
	- Data Types
	  - Numbers, Strings
	  - Lists
	  - Tuples
	  - Sets
	  - Dictionaries
	- Comparison Operators
	- If, elif, else statements

Day 3	Python Basics - Part 2
	- List Comprehension
	- Looping
	  - for
	  - while
	
	- OOPS
	  - Classes and Objects
	  - User Defined Methods
	  - Inbuilt Methods

Day 4	Python for AI High-level Introduction - Pandas - Numpy - Matplotlib - Seaborn - Scikit learn - Tensorflow - Pytorch - NLTK
Day 5	Data Analysis - Numpy - Numpy Array - Numpy Indexing and Selection - Numpy Operations - Numpy Exercises
Day 6	Data Analysis - Pandas - Series - Dataframes - Data Input and Output - Handling Missing Data - Group By - Pandas Exercises
Day 7	Data Analysis - Pandas - Merging Dataframes - Pandas Operations Data Visualization - Pandas Builtin - Histogram - Line Plot - Scatter - Pie
Day 8	Data Visualization - Matplotlib - Basic Plotting - Scatter plot - Bar Chat - Histogram - Box Plot - KDE Plot - Matplotlib Exercises
Day 9	Introduction to Machine Learning - Types of Machine Learning - Supervised

	- Unsupervised - Semi-Supervised - Reinforcement - Features and Labels/Targets - Training, Testing, and Validation Data
Day 10	Supervised Machine Learning - Regression - Classification Supervised Machine Learning Algorithms - Part 1 - Linear Regression - Logistic Regression
Day 11	Supervisied Machine Learning Algorithms - Part 2 - Decision Tree - Random Forest
Day 12	Supervisied Machine Learning Algorithms - Part 3 - KNN Performance Metrics - Regression Metrics - MAE - MSE - R-squared - Adjusted R-squared - Classification Metrics - Confusion Matrix - Accuracy - Precision - Recall - F1-score
Day 13	Unsupervised Machine Learning - Clustering - Dimensionality Reduction Unsupervised ML Algorithms - Part 1 - K-means
Day 14	Unsupervised ML Algorithms - Part 2 - DBSCAN Finding optimal cluster - Elbow method - Silhouette Score

Day 15	Mini Project - 1 - Passenger Survival (Classification) - Salary Prediction (Regression)
Day 16	Introduction to Deep Learning - Perceptron Model - Neural Networks - Tensorflow Basic
Day 17	Artificial Neural Networks - Activation Functions - Optimizers - Loss Functions - Regularization
Day 18	Convolution Neural Networks - Activation Functions in CNN - Convolutional Layers - Filters - Pooling Layers
Day 19	Deep Learning - Hands On
Day 20	Transfer Learning - Motivation behind transfer learning - Popular pre-trained models - Leveraging Pre-trained models
Day 21	Mini Project - 2 - MNIST Fashion Classification
Day 22 and 23	Final Project / Evaluation / QnA