

Project: Predicting House Prices

- **Problem Statement:** Build a regression model to predict house prices based on features like location, size, and amenities.
- **Python Concepts:** Functions, classes, numeric types, sequences.
- **Visualization:** Plotting regression line, residual plots.
- **Multivariate Analysis:** Multiple regression.
- **Dataset:** Kaggle House Prices

Project: Customer Segmentation for an E-commerce Company

- **Problem Statement:** Perform cluster analysis to segment customers based on purchasing behavior.
- **Python Concepts:** Data structures, file reading/writing.
- **Visualization:** Cluster plots.
- **Multivariate Analysis:** Cluster analysis with k-means, hierarchical clustering.
- **Dataset:** [Online Retail Dataset](#)

Project: Sentiment Analysis of Movie Reviews

- **Problem Statement:** Classify movie reviews as positive or negative using text data.
- **Python Concepts:** Text files, sequences, flow controls.
- **Visualization:** Word cloud, bar plots.
- **Multivariate Analysis:** PCA for text data, logistic regression.
- **Dataset:** IMDB Movie Reviews

Project: Handwritten Digit Recognition

- **Problem Statement:** Recognize handwritten digits using image data.
- **Python Concepts:** Numeric types, classes, functions.
- **Visualization:** Image plots, confusion matrix.
- **Multivariate Analysis:** PCA, linear discriminant analysis.
- **Dataset:** MNIST Dataset

Project: Stock Market Analysis

- **Problem Statement:** Analyze stock market data to predict future stock prices.
- **Python Concepts:** Data structures, file reading/writing, functions.
- **Visualization:** Line plots, candlestick charts.
- **Multivariate Analysis:** Time series analysis, regression.
- **Dataset:** [Yahoo Finance Stock Data](#)

Project: Loan Default Prediction

- **Problem Statement:** Predict loan default probability based on borrower information.
- **Python Concepts:** Classes, functions, sequences.
- **Visualization:** ROC curve, bar plots.

- **Multivariate Analysis:** Logistic regression, factor analysis.
- **Dataset:** Lending Club Loan Data

Project: Image Classification

- **Problem Statement:** Classify images into categories using various features.
- **Python Concepts:** File handling, classes.
- **Visualization:** Image plots, feature importance plots.
- **Multivariate Analysis:** PCA, clustering.
- **Dataset:** CIFAR-10 Dataset

Project: Predicting Diabetes

- **Problem Statement:** Predict the onset of diabetes based on medical measurements.
- **Python Concepts:** Data structures, numeric types, functions.
- **Visualization:** Scatter plots, heatmaps.
- **Multivariate Analysis:** Logistic regression, LDA.
- **Dataset:** Pima Indians Diabetes Database

Project: Wine Quality Prediction

- **Problem Statement:** Predict the quality of wine based on various chemical properties.
- **Python Concepts:** Classes, sequences, file handling.
- **Visualization:** Histograms, box plots.
- **Multivariate Analysis:** Multiple regression, factor analysis.
- **Dataset:** [Wine Quality Dataset](#)

Project: Heart Disease Prediction

- **Problem Statement:** Predict heart disease based on clinical parameters.
- **Python Concepts:** Functions, data structures.
- **Visualization:** Pair plots, ROC curve.
- **Multivariate Analysis:** Logistic regression, PCA.
- **Dataset:** Heart Disease Dataset

Project: Breast Cancer Diagnosis

- **Problem Statement:** Classify tumors as benign or malignant based on features.
- **Python Concepts:** Classes, sequences.
- **Visualization:** Confusion matrix, bar plots.
- **Multivariate Analysis:** LDA, logistic regression.
- **Dataset:** [Breast Cancer Wisconsin Dataset](#)

Project: Predicting Flight Delays

- **Problem Statement:** Predict flight delays based on historical data.
- **Python Concepts:** File reading/writing, functions.

- **Visualization:** Line plots, scatter plots.
- **Multivariate Analysis:** Regression, clustering.
- **Dataset:** Flight Delay Dataset

Project: Titanic Survival Prediction

- **Problem Statement:** Predict whether passengers survived the Titanic disaster.
- **Python Concepts:** Classes, data structures, file handling.
- **Visualization:** Bar plots, histograms.
- **Multivariate Analysis:** Logistic regression, PCA.
- **Dataset:** Titanic Dataset

Project: Energy Consumption Forecasting

- **Problem Statement:** Forecast energy consumption based on historical data.
- **Python Concepts:** Functions, numeric types.
- **Visualization:** Line plots, heatmaps.
- **Multivariate Analysis:** Time series analysis, regression.
- **Dataset:** [Energy Consumption Dataset](#)

Project: Human Activity Recognition

- **Problem Statement:** Classify different human activities using smartphone sensor data.
- **Python Concepts:** Sequences, classes, file handling.
- **Visualization:** Scatter plots, confusion matrix.
- **Multivariate Analysis:** Clustering, LDA.
- **Dataset:** [Human Activity Recognition Using Smartphones](#)