Wine Quality Prediction using Neural Network

Problem Statement

Build a neural network model to predict the quality score of wine based on its physicochemical properties.

Dataset

Name: Wine Quality Dataset
Description: Contains approximately 6,500 samples of red and white wine with 11 physicochemical features such as acidity, sugar, pH, and alcohol.
Target Variable: Quality score (integer from 0 to 10)
Download Link: UCI Machine Learning Repository (https://archive.ics.uci.edu/ml/datasets/wine+quality)

Steps to Complete

- Import required libraries.
- Load Dataset: Download CSV from UCI and read into a DataFrame.
- Explore Data: Check feature distributions and target variable range.
- Preprocess Data: Normalize features if required.
- Split the data using train_test_split (80% train, 20% test).
- Build Neural Network using Keras.
- Compile the model using a suitable optimizer and a loss function.
- Train the model on training data and validate on test data.
- Evaluate the model using Mean Squared Error (MSE) and visualize predictions vs actual values.

Submission

Submit Jupyter Notebook (.ipynb) file with the running code and necessary explanations (written in markdown cells). Also submit the supporting files (if any).