Machine Learning Models:

-Image Dataset:

Plant Disease Dataset

-Numeric Dataset:

GPA Prediction Dataset

Project Overview

Objective

- Plant Disease Classification

-Student Gpa Prediction

Key Models

-logistic regression & Knn for Plant Disease

-linear regression & knn for Gpa prediction

Image Dataset Documentation

Plant Disease Dataset

- **Classes and Number of Samples:**
  - **Pepper Bell Bacterial Spot: 997**
  - **Pepper Bell Healthy: 1478**
  - **Potato Early Blight: 1000**
  - **Potato Late Blight: 1000**
  - **Tomato Early Blight: 1000**
- **Image Size**
  - **150x150**
- **Number of Training Samples**
  - **4106**
- **Number of Testing Samples**
  - **1369**
- **Number of Features (Pixels)**
  - **67500**
- **Results for Model Testing Data**
  - **Logistic Regression**
    - **Accuracy: 0.78**
    - **Precision: 0.78**
    - **Recall: 0.78**
    - **AUC: 0.94**
  - **KNN**
    - **Accuracy: 0.55**
    - **Precision: 0.69**
    - **Recall: 0.55**
    - **AUC: 0.81**
  - **Graphs for ROC are available in the Notebook**

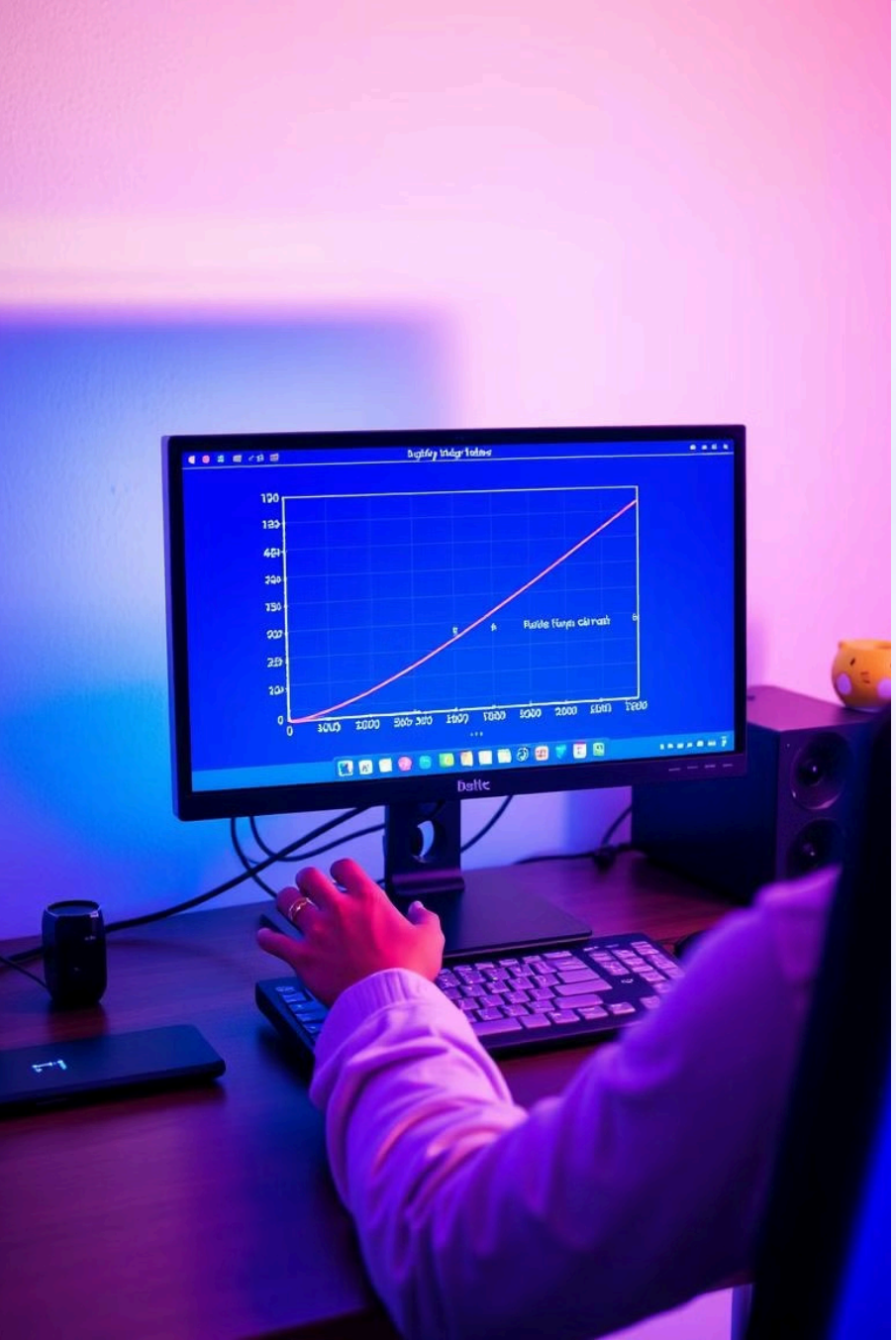
Linear Regression: GPA Prediction

1 **Import Libraries**

Python libraries: Pandas, NumPy, Scikit-learn, Matplotlib

2 **Preprocessing**

Handle missing values, normalize numeric data, encode categorical features.



Linear Regression: Training and Testing

1 **Data Splitting**

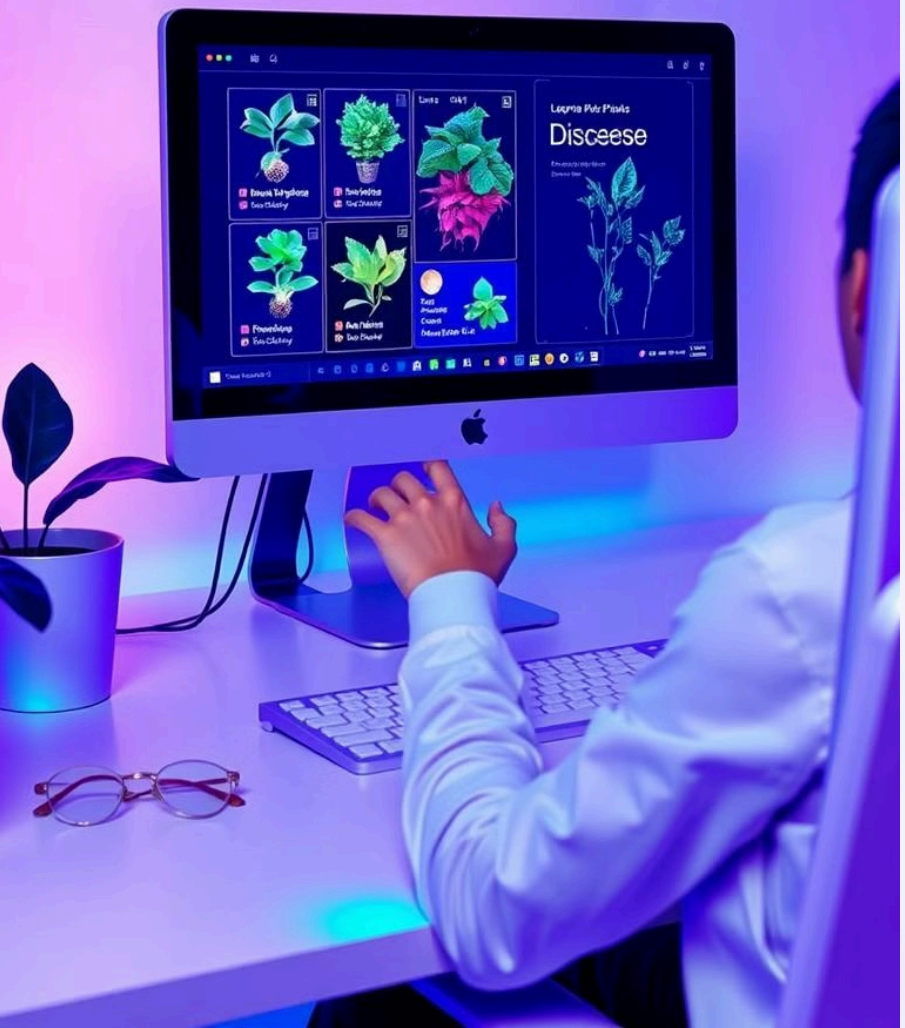
Train-test split (e.g., 80% train, 20% test)

2 **Train the Model**

Use Scikit-learn's LinearRegression() function.

3 **Model Evaluation**

Metrics: MAE, MSE, R^2 Score.



KNN: Plant Disease Classification

1 Import Libraries

Python libraries: NumPy, TensorFlow, Keras, Matplotlib

2 Load Images

Use libraries like OpenCV or Keras to preprocess and label images.

3 Data Splitting

X (features): Image pixel data; Y (labels): Disease/healthy category.

KNN: Training and Testing

1

Train the Classifier

Use Scikit-learn's KNeighborsClassifier().

2

Performance Evaluation

Metrics: Accuracy, Precision, Recall, F1 Score.

Comparison and Applications

Linear Regression

Predicts continuous values (GPA). Evaluation metrics: MAE, MSE, R^2 Score.

KNN Classifier

Predicts discrete categories (diseased/healthy). Evaluation metrics: Accuracy, Precision, Recall, F1 Score.