Crop Yield Detection with Machine Learning

Overview:

This project aims to predict crop yields using machine learning techniques. The implementation includes data analysis, model training, and a predictive system for estimating crop yields based on various factors such as climate, pesticides used, and crop type.

Features:

- Exploratory Data Analysis (EDA) to understand the dataset
- Visualization of relationships between crop yield and environmental factors
- Data preprocessing to handle missing values and categorical variables
- Training and evaluation of regression models including Linear Regression, K-Nearest Neighbors, Lasso Regression, Ridge Regression, and Decision Tree Regression
- Selection of the best-performing model based on evaluation metrics
- Creation of a predictive system for estimating crop yields
- Saving the trained model and preprocessing steps for future use
- SHAP (SHapley Additive exPlanations) analysis for model interpretation

Requirements:

- Python 3.x
- NumPy
- pandas
- seaborn
- matplotlib
- scikit-learn
- plotly
- SHAP