

Rice Plant Disease Detection

Overview:

This project focuses on detecting diseases in rice plants using machine learning techniques. Accurate and timely detection of plant diseases is crucial in agriculture to ensure crop health and maximize yield. This project involves preprocessing image data, training a classification model, and evaluating its performance in identifying different types of rice plant diseases.

Objectives:

- To preprocess image data of rice plant leaves.
- To train a machine learning model to classify different diseases affecting rice plants.
- To evaluate the model's performance using various metrics.
- To provide a tool that can assist farmers and agronomists in early disease detection.

Dataset:

The dataset comprises images of rice plant leaves categorized into different disease classes. Each image is labeled with the type of disease affecting the leaf, or marked as healthy.

Methodology:

1. Data Preprocessing
2. Model Building
3. Model Evaluation
4. Model Tuning
5. Deployment and Usage

Results:

The project delivers a trained model capable of accurately identifying diseases in rice plants from images. Key results include:

- A robust model trained to distinguish between healthy and diseased rice plant leaves.
- Detailed evaluation metrics showing the model's effectiveness.
- Visualizations and confusion matrices illustrating the model's performance across different disease categories.

Conclusion:

This project demonstrates the application of deep learning in agricultural technology, specifically for disease detection in rice plants. The resulting model and tool can aid in early disease detection, helping to maintain healthy crops and improve agricultural productivity.