

Project Synopsis: Plant Disease Classification and Recommendation System

Overview:

This project aims to develop a web-based plant disease classification and recommendation system using deep learning and Flask. The system allows users to upload images of infected leaves, which are then classified into different disease categories using a convolutional neural network (CNN). Based on the classification result, the system provides recommendations for supplements and prevention measures.

Tech Stack:

- **Frontend:** HTML, CSS, JavaScript, and Flask for web development
- **Backend:** Python, Flask, and PyTorch for deep learning and server-side logic
- **Database:** Pandas for data manipulation and CSV files for data storage
- **Deep Learning:** PyTorch for building and training the CNN model

System Components:

1. **Image Classification Model:** A custom CNN architecture is designed and trained using the Plant Village Dataset, which contains 61486 images of infected leaves from various plant species.
2. **Web Application:** A Flask-based web application is developed to allow users to upload images of infected leaves and receive classification results and recommendations.
3. **Recommendation System:** Based on the classification result, the system provides recommendations for supplements and prevention measures using data from the `disease_info.csv` and `supplement_info.csv` files.

System Workflow:

1. **Image Upload:** The user uploads an image of an infected leaf to the web application.
2. **Image Classification:** The uploaded image is classified into a disease category using the trained CNN model.
3. **Recommendation Generation:** Based on the classification result, the system generates recommendations for supplements and prevention measures.
4. **Result Display:** The classification result and recommendations are displayed to the user.

Documentation:

- **app.py:** The main Flask application file that handles image uploads, classification, and recommendation generation.
- **CNN.py:** The file containing the custom CNN architecture and training code.
- **disease_info.csv:** A CSV file containing information about different plant diseases, including their names, descriptions, and prevention measures.
- **supplement_info.csv:** A CSV file containing information about supplements, including their names, images, and buy links.
- **templates:** A folder containing HTML templates for the web application.
- **static:** A folder containing static files, including images and CSS files.

Conclusion:

This project demonstrates the effectiveness of deep learning-based approaches for plant disease classification and recommendation systems. The proposed system can be used to develop a web-based or mobile application for farmers and agricultural experts to diagnose plant diseases quickly and accurately.

Presented by: Group 1

Sai Samarth S Budihal	2VD22CS046
Sughnva Chappar	2VD22CS055
Suprit R M	2VD22CS057
Vishwanath Kotyal	2VD22CS063