🧠 About This App

This **AI-powered plant disease advisor** helps farmers, researchers, and hobbyists detect diseases in crops through simple image uploads.

Built with:

- 🧠 TensorFlow for disease prediction
- 🕸️ Kafka for real-time streaming
- 🧬 LangChain + Ollama for AI diagnosis
- 🛠️ MLflow for tracking performance
- 🤖 CrewAI agents for expert reasoning

📚 Dataset: PlantVillage

🔗 Source: Kaggle Notebook

🌿 Plant Disease Diagnosis Assistant

Upload a high-quality image of a **plant leaf**, and let our AI detect any potential diseases and provide expert suggestions for treatment.

This tool is designed to assist farmers, researchers, and agritech enthusiasts in early disease detection and management.

🔍 What Can This Tool Do?

✅ Detect diseases from plant leaf images
✅ Generate AI-guided solutions using natural language
✅ Process images in real-time
✅ Display diagnosis reports powered by local LLMs
✅ Track model predictions for experimentation

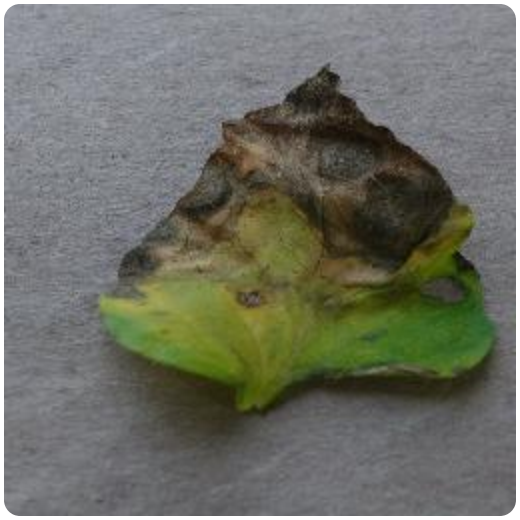
Supported diseases include:

- 🍎 Apple Scab
- 🌽 Corn Rust
- 🍇 Grape Black Rot
- 🥔 Potato Early Blight
- 🍅 Tomato Mosaic Virus

📤 Upload a plant leaf image

Drag and drop file here
Limit 200MB per file • JPG, PNG, JPEG
Browse files

Tomato.jpeg 11.4KB



🖼️ Uploaded Leaf Image

🩺 **Predicted Disease:** Tomato Late blight

📋 AI Diagnosis Report

🧪 Disease Explanation

🚀 **🌱 Tomato Late Blight 🌱**
Tomato Late Blight is a dangerous disease that affects tomato plants. It's caused by the fungus *Phytophthora infestans*, and it can quickly destroy entire crops if not managed properly.

Symptoms:

1. Dark, water-soaked lesions on the leaves, which eventually turn brown and collapse.
2. Black spots on the stems at the leaf attachment points.
3. Large areas of dying tissue on the lower leaves, with entire leaves turning yellow and falling off.
4. Black spots on the underside of the leaves, which produce spores that can spread the disease to other plants.
5. Affected fruits develop black leathery lesions that eventually turn gray-green, and become covered in a white mold.

Causes: Tomato Late Blight is caused by the *Phytophthora infestans* fungus, which thrives in cool and wet conditions. The spores of the fungus are spread by rain, wind, and infected seeds or transplants.

When it usually occurs: Late blight typically appears during the summer and early fall when temperatures are cooler (60°F/15°C or lower) and there is consistently high humidity or frequent wetting of the leaves.

Prevention and Treatment steps:

1. Plant resistant tomato varieties whenever possible.
2. Practice crop rotation, don't plant tomatoes in the same spot for more than one year.
3. Avoid overhead watering, instead use drip irrigation or soaker hoses to keep leaves dry.
4. Remove and destroy infected plants promptly to prevent the spread of the disease.
5. Use copper-based fungicides as a preventative treatment early in the growing season. If an outbreak occurs, apply fungicides as directed on the label to manage the disease.
6. Always use certified seed or transplants that are free from known diseases.

🧠 **How it works:**

1. You upload a plant leaf image.
2. A deep learning model built with TensorFlow analyzes the image.
3. The system predicts the disease and engages AI agents (via CrewAI) for deeper insights.
4. You receive a diagnosis and recommendations, all powered by local LLMs and LangChain pipelines.

💬 For feedback, feature requests, or contributions, please reach out or check the GitHub repo.