



Plant Disease Detection: An AI-Powered Solution

Introducing our AI-driven plant disease detection project. Leveraging Hugging Face Diffusers for innovative solutions. Addressing critical issues in agriculture and food security worldwide.

Project Overview: Goals and Objectives

Goal

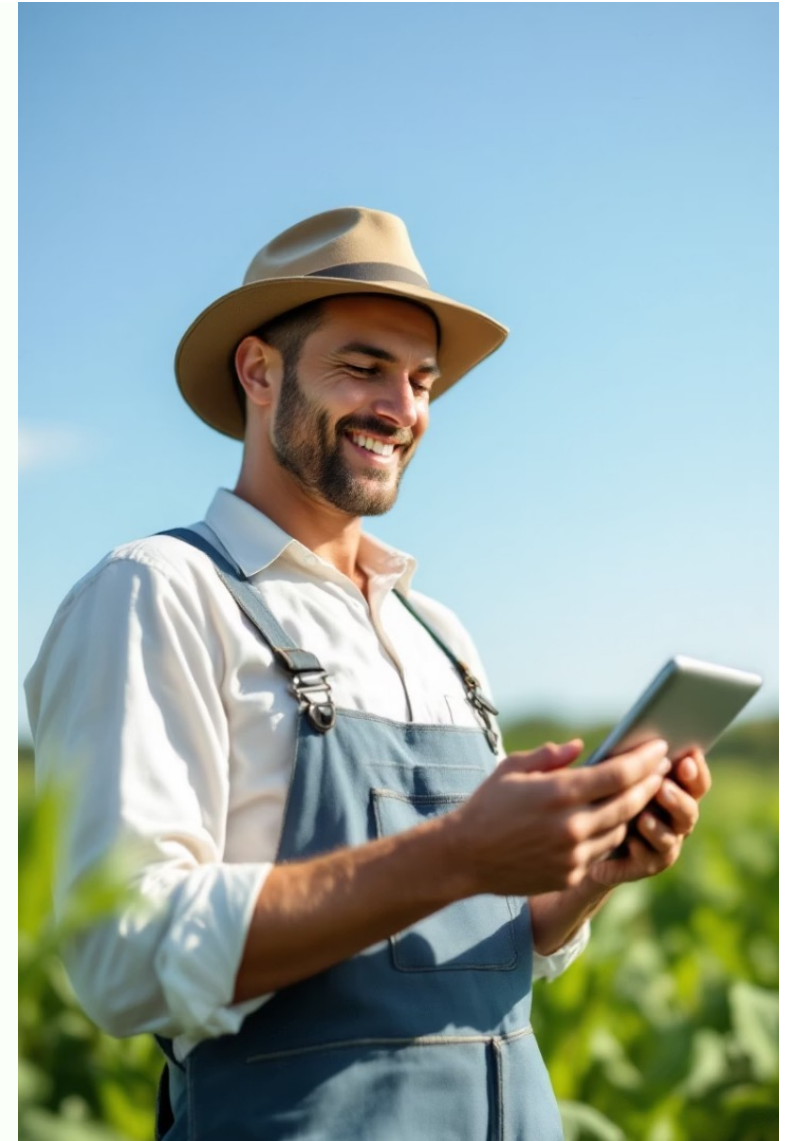
Develop an accurate and versatile plant disease detection system

Objectives

- Detect common plant diseases from images with high accuracy
- Generate images based on symptom descriptions
- Create user-friendly interface

Target Users

Farmers, researchers, and plant health professionals





Technology Stack: Hugging Face Diffusers

Hugging Face Diffusers Library

Powerful open-source resources for image processing and generation

Pre-trained Models

Accelerates development with high-quality AI models

Efficiency

Reduces development time by 40%

AI Models: Logistic Regression for Disease Detection

Logistic Regression

Fast and interpretable disease classification algorithm

Model Details

- Trained on thousands of healthy and diseased plant images
- High accuracy on test data
- Compact size and quick inference

AI Models: Stable Diffusion for Image Generation

Stable Diffusion

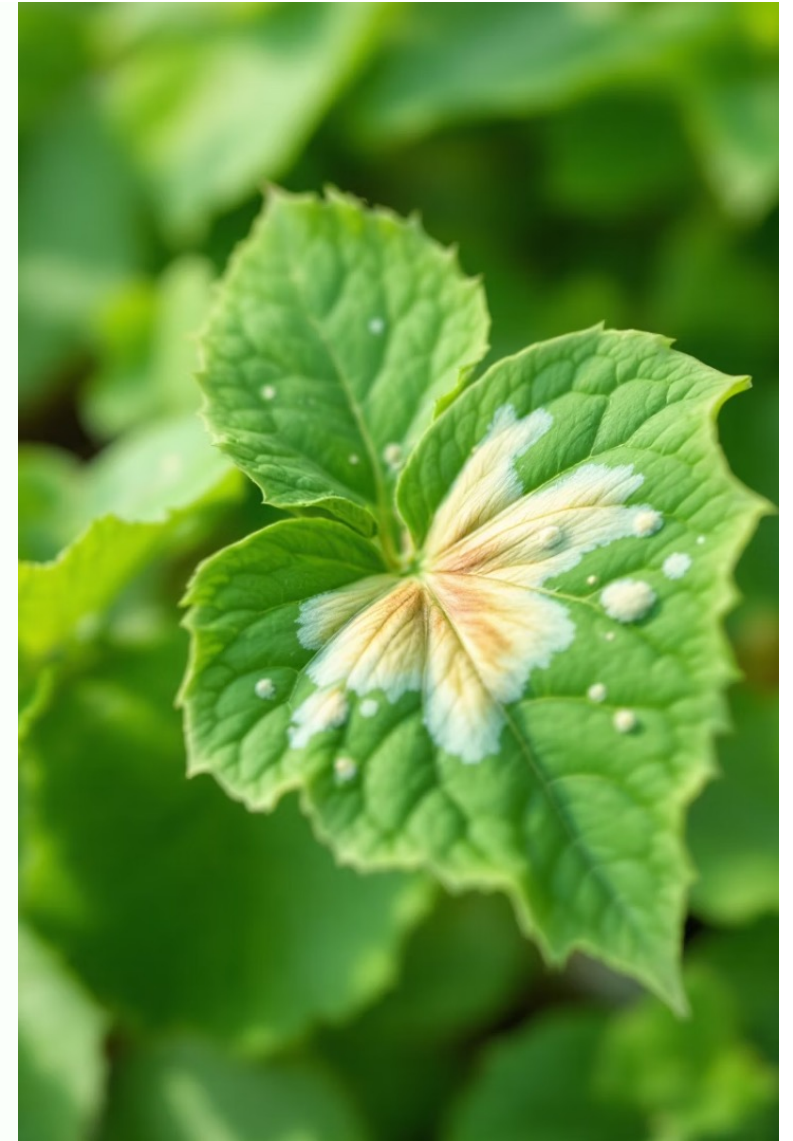
Generates realistic images
of plants with disease
symptoms

Fine-tuning

Trained with symptom-
image pairs for accurate
visualization

Use Cases

Visualize disease progression and educate users



Data Sources: Building a Robust Dataset

Data Collection

Public datasets and collaborations
with institutions

Augmentation Techniques

- Rotation
- Zoom
- Crop
- 5x data increase

Diversity

80 crop types and 20 diseases
covered to reduce bias

Functionality: Symptom-Based Image Generation

Input Symptoms

User provides text description of symptoms

Image Generation

Stable Diffusion creates realistic diseased plant images

Applications

Useful for education, research, and diagnostic support





Potential Impact and Applications

Early Detection

Minimizes crop losses and maximizes yields

Targeted Treatment

Enables timely, effective interventions

Education

Raises awareness and improves plant health knowledge

Sustainability

Supports eco-friendly agricultural practices



Future Work and Next Steps

1 *Expand Dataset*

Add more plant species and disease types

2 *Improve Models*

Enhance accuracy and robustness

3 *Mobile App*

Develop on-the-go disease detection tools

4 *Drone Integration*

Explore aerial imaging for large-scale monitoring



Meet Our Team

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Thank You!

We appreciate your time and attention. Looking forward to our continued collaboration.