



AGRO-SCAN

**PLANT DISEASE DETECTOR +IMAGE
VALIDATION**

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Problem Statement

- *Agriculture faces major losses due to undetected or late-detected plant diseases.*
- *Farmers often rely on manual observation, which is inaccurate and time-consuming.*
- *Limited access to expert knowledge in rural or remote areas.*
- *Misdiagnosis leads to wrong pesticide usage, harming crops and environment.*

Solution Overview

- ***Agro-Scan** is an intelligent, image-based plant disease detection system.*
- ***It uses AI and computer vision to analyze plant leaf images.***
- ***Validates image quality and gives accurate disease diagnosis.***
- ***Aims to empower farmers and agronomists with quick and reliable tools.***

How it Works

- *Image Capture - Farmer captures a leaf image using a smartphone.*
- *Image Validation - System checks image clarity, lighting, and relevance.*
- *Disease Detection - Pre-trained AI model classifies disease type.*
- *Result Output - Displays diagnosis with treatment suggestions.*

Technology Stack

- *Python* : The primary programming language used for backend development.
- *YOLOv8* : (You Only Look Once) real-time object detection algorithm used for acne identification in images.
- *Ultralytics* : Python package that provides easy access to YOLO models.
- *Gradio model.* : Used to build a web-based graphical user interface (GUI) for the model.
- *NumPy* : For handling image arrays and numerical operations.
- *Pillow (PIL)* : Python Imaging Library for image manipulation and format handling.

Project Scope

The background of the slide is a photograph of a person wearing blue nitrile gloves. They are using metal tweezers to place a small, yellowish-green plant specimen into a clear petri dish. The background of the photo is a field of green, leafy crops, possibly lettuce or similar leafy greens, under bright, natural light.

- *Detect common diseases in crops like tomato, potato, maize, etc.*
- *Validate image quality before classification.*
- *Multilingual user interface for accessibility.*
- *Future scope: pest detection, soil analysis, weather-based suggestions.*

Deployment

- *Deployed on cloud (AWS/GCP) for scalability.*
- *Mobile-first approach ensures field usability.*
- *APIs enable integration with agricultural platforms.*
- *Offline functionality under development for low-connectivity areas.*

Results and Impacts

- *Accuracy:* >90% in detecting major plant diseases.
- *Time Saved:* Reduces diagnostic time from days to minutes.
- *User Adoption:* Positive feedback from pilot users/farmers.
- *Environmental Impact:* Promotes optimal pesticide usage.

Conclusion

- *Agro-Scan bridges the gap between technology and agriculture.*
- *Helps farmers make informed decisions and protect crops.*
- *A scalable, AI-driven solution with real-world impact.*
- *Future enhancements to make it even more comprehensive.*

OUR TEAM

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