HACKORBIT

Digital Learning Group

HackOrbit 2025

Team Name - AURA

THEME : SUSTAINABILITY

PROBLEM STATEMENT :

Plant diseases are a big problem for farmers. They affect not just the crop yield but also food supply and income. Right now, identifying these diseases takes a lot of time, and the process isn't always reliable. Most farmers still depend on manual observation or local experts — and that often leads to delayed action or the wrong treatment.

In rural and under-resourced areas, the problem is even worse. Many farmers don't have access to quick, accurate help when something goes wrong with their crops. Diseases spread fast, and by the time help arrives, it's often too late.

This gap in early diagnosis leads to heavy losses and frustration for farmers. Without affordable and easy-to-use tools, they're stuck with trial-and-error methods that cost time and money.

The Problem

- Detection is slow and based on guesswork
- Not always accurate or timely.
- Hard to get expert help, especially in rural areas

Consequences

- Delayed action leads to crop loss
- Incorrect use of pesticides
- Increased farming costs with lower productivity

The Need

There's a real need for a simple, affordable, tech-based solution that helps farmers spot plant diseases early — so they can act fast and protect their crops.

PROPOSED SOLUTION

We're building a mobile and web-based platform to help farmers detect plant diseases using deep learning model. Once detected, the app suggests treatments and connects them with experts for quick support — even in low-connectivity areas.

AI-powered image detection using deep learning model

Offline access and SMS alerts for low-network regions

Crop-wise disease library with home remedies and recommended treatments

Real-time updates on disease outbreaks in specific regions.

Multi-language support with voice-enabled interface for rural users.

Connects farmers with nearby agri-specialists

Key Component : Live chat and callback support from agri-professionals, plus a smart multilingual chatbot to answer queries and guide farmers step-by-step.

FLOWCHART / DIAGRAM

1. User opens the app (Option to select language/voice enabled)
2. Uploads or captures image of affected plant/leaf (Optionally adds crop type for detected automatically)
3. Image processing and enhancement (Blue/noise check; resize; standardization for modal input)
4. AI-based disease prediction using trained CNN model (Returns disease name and severity level)
5. Output displayed with:
   1. Disease name
   2. Description and severity
   3. Treatment recommendations (home remedies and chemicals)

Additional Features:

- **Chat bot (multilingual)**
- **Expert connect via live for step-by-step guidance**
- **Save diagnosis to app history**

FLOWCHART EXPLANATION

How It Works

- User opens app and captures or uploads an image of the affected plant.
- The image is preprocessed (resized, denoised) to ensure clarity and model compatibility.
- The cleaned image is passed through a trained CNN model to detect:
  - Disease type
  - Severity level
  - Suggested treatment (organic/chemical/home remedies)
- Results are displayed on-screen with simple, actionable insights.
- User can:
  - Save the diagnosis for tracking or offline access
  - Use a multilingual chatbot for step-by-step help
  - Connect with experts via live chat or callback
- In low-network areas, the app works offline and sends SMS-based alerts.
- Local data (crop type, region) ensures recommendations are relevant and personalized.
- Users can also report unknown diseases, helping improve the system over time.

FEATURES AND NOVELTY

FEATURES :

- AI-powered plant disease detection in real-time
- Tailored support for Indian crops and regional disease types
- Multilingual interface with voice-enabled assistance
- Offline access with downloadable disease guide
- Expert review option if model confidence is low

NOVELTY :

- Bridges agriculture and healthcare through smart tech
- Works in low-connectivity areas via SMS and offline mode
- Uses crowd-sourced images to continuously improve accuracy

DRAWBACK AND SHOWSTOPPERS

DRAWBACKS :

- Model may misidentify diseases in poor-quality images.
- Requires a large dataset for high accuracy across various crops.
- Farmers with no smartphone access may be excluded.

SOLUTIONS :

- Implement image quality checks and prompt retakes.
- Start with most common crops (e.g., tomato, rice, wheat) and expand.
- Deploy an SMS-based minimal version for non-smartphone users.

TEAM MEMBERS

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Thank you