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AEGIS

AMITY UNIVERSITY GREATER NOIDA

PRAKRITI

Empowering Farmers with Intelligent Crop Care

Rishabh Gussain

Mohit Sharma

Jagdeep Singh

PROBLEM STATEMENT ID : PS 7 DIGITAL DOCTOR FOR FARMERS

TEAM NAME / TEAM ID : AEGIS / HK -203

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Systemic Gaps in Crop Disease Management

Farmers in rural India face severe crop losses — government-linked reports estimate annual losses worth up to ₹0.9–1.4 lakh crore due to pests, diseases, and related factors — because of delayed disease detection, incorrect treatment decisions, and lack of localized advisory support. Existing solutions fail to address connectivity, language, and regional farming conditions effectively.

1. DELAYED AND REACTIVE DISEASE IDENTIFICATION
2. INACCURATE AND UNSUITABLE PESTICIDE APPLICATION
3. LANGUAGE ACCESSIBILITY BARRIERS IN RURAL AREAS
4. NETWORK DEPENDENCY AND CONNECTIVITY LIMITATIONS

Introducing Prakriti - The AI Crop Doctor

What is Prakriti ?

Prakriti is a mobile-first, AI-powered crop health intelligence system built specifically for rural farmers. It combines computer vision for disease detection, satellite-based environmental insights, geolocation data, and multilingual AI assistance into a unified digital advisory platform.

The system is designed for low-connectivity regions and supports offline-first functionality, ensuring accessibility even in remote agricultural areas.

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What it delivers

Instant Diagnosis

Prakriti provides immediate crop disease diagnosis.

Tailored Guidance

It offers context-aware treatment guidance based on location, soil, and climate.

Clear Recommendations

Prakriti provides clear, structured recommendations in local dialects.

Continuous Support

It ensures continuous support through offline-first functionality and intelligent synchronization.

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Tech Stack

Frontend Layer

React + Vite for mobile-first UI, TailwindCSS for styling, Capacitor for Android deployment.

Backend Layer

FastAPI for scalable API, Uvicorn for server, Pydantic for validation, Supabase SDK integration.

AI & ML Stack

CNN/EfficientNet for classification, Segmentation model for severity, Gemini 3 API for NLP, TensorFlow/PyTorch for training.

Satellite & Geospatial Intelligence

Google Earth Engine, AlphaEarth embeddings, Leafmap + MapLibre for visualization.

Database & Cloud

Supabase for PostgreSQL, Storage, Auth. Railway/Render/Google Cloud for deployment. Docker + GitHub Actions for DevOps.

Voice & Messaging Integration

Google Text-to-Speech, Web Speech API, WhatsApp Cloud API, Telegram Bot API.

CORE FEATURES OF PRAKRITI

Disease Detection

AI identifies crop diseases from images, scores infection severity, and provides real-time diagnostics.

Location Advisory

GPS-based treatment recommendations are informed by soil, climate, and weather-integrated pest risk insights.

Farmer Interface

Local dialect voice and text assistance are provided through a simple, low-literacy-friendly, voice-enabled interface.

Continuous Support

A 7-day actionable treatment plan includes dosage, irrigation, safety instructions, and diagnosis history tracking.

Offline Access

Offline-first functionality with smart synchronization, low-bandwidth mobile design, and WhatsApp/Telegram bot integration.

FEASIBILITY

1. Built on proven AI frameworks and existing cloud infrastructure.
2. Public crop disease datasets and government resources support model training.
3. Modular design allows phased development and gradual scaling.
4. Low-cost deployment makes it practical for rural rollout.

Key Challenges in AI for Agriculture

Challenge	Description
Diagnostic Accuracy	High accuracy in diverse farm conditions
Model Optimization	Smooth operation on low-end smartphones
Recommendations	Updated, region-specific pesticide advice
Connectivity	Reliable internet connectivity is crucial
Farmer Trust	Building trust and encouraging consistent usage

Sustainable Business Model

- Free basic crop diagnosis
- Affordable premium insights (₹49–₹99/month)

- Commission from verified agri-input partners
- Affiliate-based product recommendations

- FPOs & NGOs
- Bulk licensing model

THANK YOU