IBM Granite Generative AI Hackathon

The AgriGetters

PlantPulse – AI-Powered Plant Health & Safety Assistant

Identify plants, detect toxicity, and receive AI-driven health recommendations instantly.

The Problem

Modern plant care faces challenges like identifying toxic plants, diagnosing diseases, and ensuring plant health.

- Farmers struggle to identify toxic or invasive plants affecting crop yields.
- Pet owners and households risk exposure to toxic plants.
- Plant diseases spread undetected, leading to major losses in agriculture.

Up to 40% of crop losses globally are due to plant diseases (FAO).

The Solution, PlantPulse AI

PlantPulse is an AI-Powered Plant Safety & Health Assistant that:

- ➔ **Uses computer vision and AI to identify plants.**
- ➔ **Detects toxicity levels and provides health assessments.**
- ➔ **Offers actionable care recommendations based on AI analysis.**

It is built for farmers, gardeners, pet owners, and agritech companies.

How it Works

From Scan to Insights in Seconds

1. **User Uploads a Plant Image → Taken via camera or gallery.**
2. **AI Model Analyzes the Image → Identifies plant species, checks for toxicity, health issues.**
3. **Data Cross-Check → Matches results with a plant health database.**
4. **Instant Insights & Recommendations → Displays plant name, toxicity risk, and care tips.**

Tech Stacks Utilised

AI/ML: watson ai

Hosting: render

Backend: IBM cloud

Frontend: React + vite

Database: SQLite

Use cases and Impact

Who Benefits from PlantPulse?

🌾 **Farmers → Protect crops from invasive/toxic plants.**

🐶 **Pet Owners → Identify dangerous plants for pets.**

🪴 **Gardeners & Botanists → Quick plant ID & health insights.**

🏢 **Agritech & Research → Integrated plant health monitoring for agritech platforms.**

Market Scope

Total Addressable Market (TAM): The global smart agriculture market is valued at over $18 billion and expected to grow as precision farming becomes more widespread.

Serviceable Addressable Market (SAM): The agritech AI market is projected to reach $2.5 billion by 2028, with increasing adoption by medium and large-scale farms.

Serviceable Obtainable Market (SOM): Targeting agritech firms, greenhouse farmers, and individual users with an estimated market reach of $500 million in the next 5 years.

Revenue Streams

B2B SaaS Model: Subscription-based API integration for agritech firms.

Freemium Model: Basic plant ID for free, premium AI insights for a fee.

Data Licensing: Providing plant health and agricultural insights to research institutions and agribusinesses.

Hardware Integration: Future expansion into AI-powered IoT sensors for smart greenhouses.

Future Roadmap

Future Roadmap – Integration with AgriGateFlow

PlantPulse is part of AgriGateFlow's long-term ecosystem, expanding into:

✅ Automated greenhouse management → Integrating plant health data into AgriGateFlow's smart greenhouse system.

✅ IoT Sensor Data Fusion → Combining AI image analysis with real-time IoT soil & air sensors.

✅ Predictive AI for Crop Management → Detecting disease outbreaks early & automating interventions.

Competitive Analysis

What Sets PlantPulse Apart?

Feature	*PlantPulse*	*PlantNet*	*Google Lens*	*Existing Agritech Tools*
Plant ID	✅ Yes	✅ Yes	✅ Yes	✅ Yes
Toxicity Detection	✅ Yes	❌ No	❌ No	❌ No
Health Diagnosis	✅ Yes	❌ No	❌ No	✅ Some
AI Recommendations	✅ Yes	❌ No	❌ No	✅ Some
Integration with IoT & Smart Farming	✅ Yes (Future)	❌ No	❌ No	✅ Some

Future Enhancements

Scaling Beyond the Hackathon

🔜 Expand Plant Database → Improve AI accuracy with more species & toxicity insights.

🔜 Mobile App Development → Move beyond web-based UI for wider adoption.

🔜 IoT Integration → Pair AI vision with soil moisture & air sensors.

🔜 Multi-Language Support → Reach diverse farming communities globally.

Call to Action

Try PlantPulse & Join the Future of Smart Farming!

🚀 **Test the Demo application here**

📂 **View Our Code here on GitHub**

💡 **Join Our Mission of climate and food sustainability by collaborating/partnering with us!**

THANK YOU FOR YOUR ATTENTION

PLANTPULSE AI

AI-Powered plant health & safety assistant

By ***the AgriGetters***

For IBM Granite Generative AI Hackathon via lablab.ai