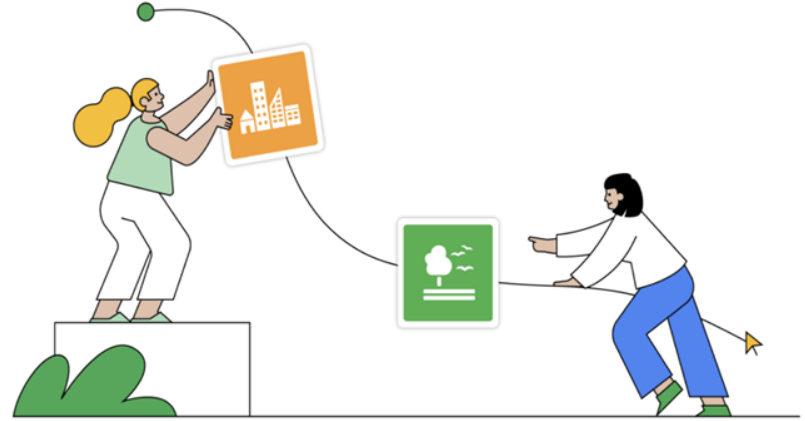




Solution Challenge



Team Details

- a. Team name: Green Code Warriors
- b. Team leader name: Pratibha Jape
- c. Problem Statement: Drone-Based Intelligent System for Agricultural Applications

Solution Overview

Our approach is to develop a fully autonomous drone system that leverages AI and IoT to revolutionize precision agriculture. By integrating real-time decision-making capabilities, our solution will optimize resource usage and enhance farming efficiency.

Our Solution:

- ✓ **Autonomous Crop Monitoring:** The drone continuously scans and analyzes crops to identify potential threats and required interventions.
- ✓ **AI-Powered Decision-Making:** Real-time data is processed using advanced machine learning models to detect diseases and optimize farming strategies.
- ✓ **Targeted Precision Spraying:** AI-driven geospatial mapping ensures precise application of fertilizers and pesticides, minimizing waste and maximizing impact.
- ✓ **IoT-Enabled Smart Farming:** The system seamlessly integrates with soil moisture sensors, weather stations, and irrigation systems to enhance farm management.

By automating critical farming tasks and offering actionable insights, our solution improves efficiency, reduces resource wastage, and promotes sustainable agricultural practices.

How Different is it from Existing Ideas?

- ✓ Unlike traditional drones used for surveillance, our drone is fully autonomous and performs active farming operations like spraying and soil analysis.
- ✓ It integrates AI, IoT, and blockchain for real-time decision-making and data security.
- ✓ Features like auto-initialization, swarm coordination, and smart irrigation integration set it apart from existing solutions.

How Will It Solve the Problem?

- ✓ Automates farming operations, reducing labor dependency.
- ✓ Enhances resource efficiency, minimizing pesticide and fertilizer wastage.
- ✓ Provides real-time data on soil and crop health for improved yield predictions.
- ✓ Ensures precision agriculture by targeting only the required areas for intervention.

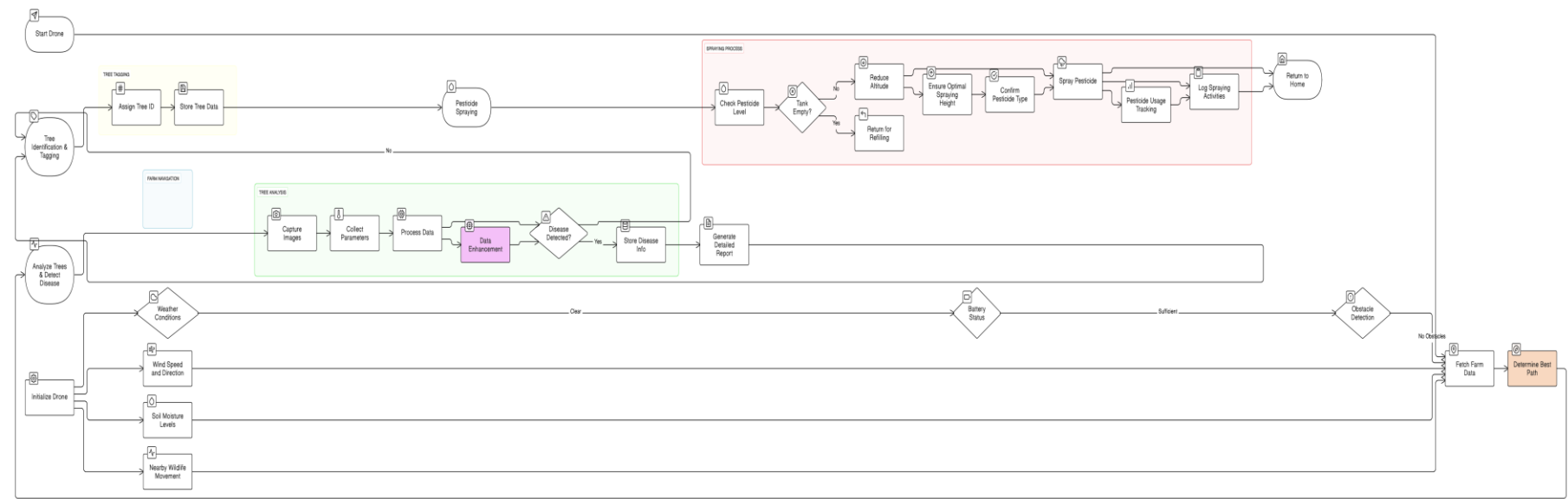
USP of the Proposed Solution

- ✓ **Completely Autonomous Drone & Auto Initialization:** The drone operates with minimal human intervention, from takeoff to landing.
- ✓ **AI-Driven Decision Making:** optimized resource utilization based on real-time farm conditions.
- ✓ **IoT Integration:** Ensuring transparency, security, and connectivity.
- ✓ **Swarm Drone Coordination:** Enables large-scale precision farming.

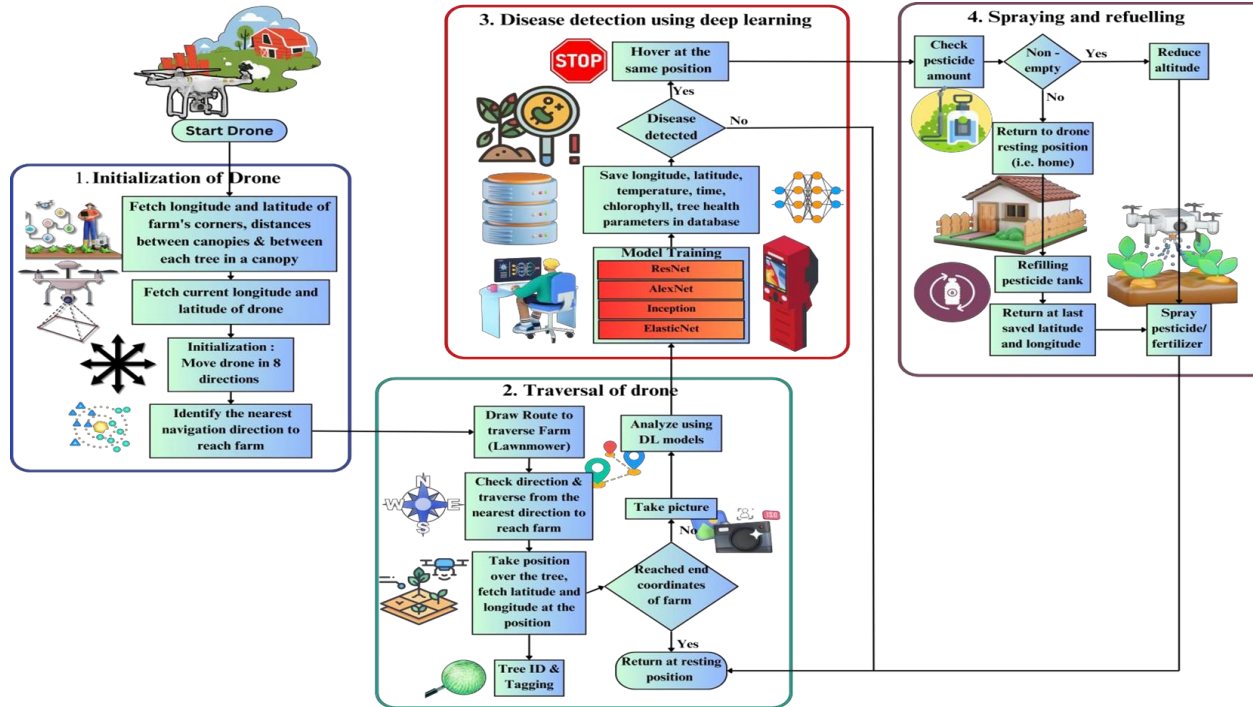
Key Features:

- ❑ **Automated Crop Health Monitoring:** AI-driven disease and pest detection
- ❑ **Yield Estimation:** Predictive analytics for production forecasting
- ❑ **Precision Spraying:** Targeted pesticide and fertilizer application using drones
- ❑ **Geospatial Mapping:** Advanced imaging for field analysis
- ❑ **Remote Monitoring Dashboard:** Real-time farm insights and analytics
- ❑ **Market Integration:** Connection with supply chains and marketplaces
- ❑ **Smart Alerts & Notifications:** Timely recommendations for farmers
- ❑ **Weather & Soil Analysis:** Real-time data collection for informed decision-making
- ❑ **Autonomous Navigation & Obstacle Avoidance:** AI-powered drone movements ensuring safety and efficiency

Process flow diagram :



System Architecture :



Technologies to be used in the solution

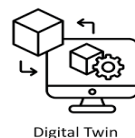
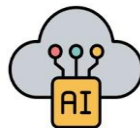
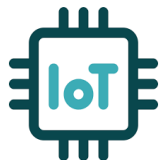
- **Frontend**



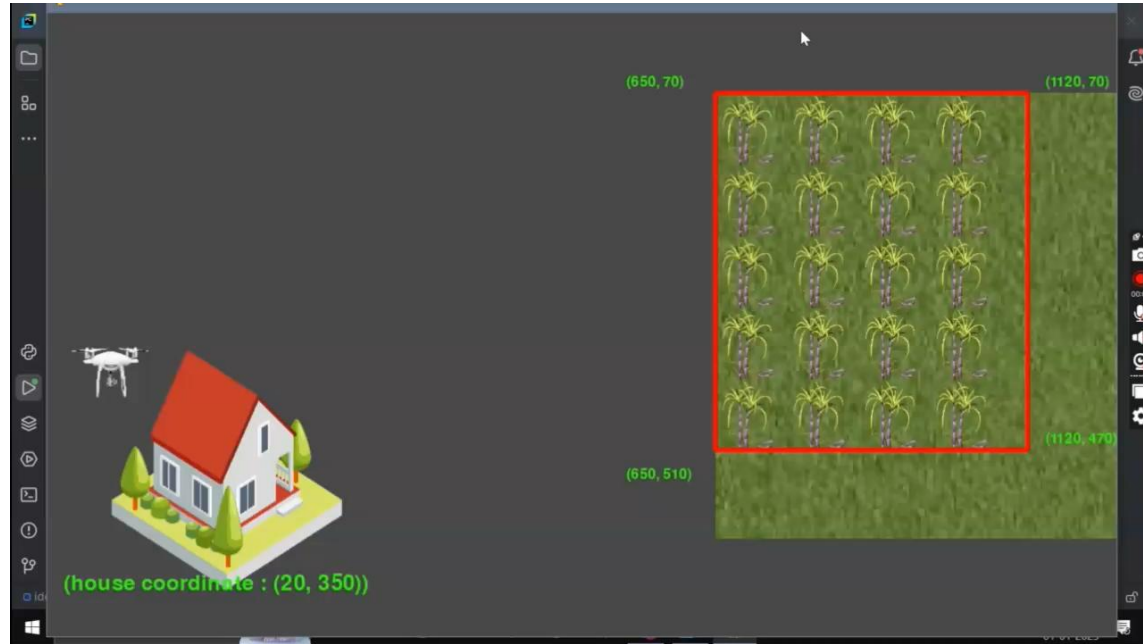
- **Backend**



- **Connectivity**



Snapshots of the MVP



Provide links to your:

1. GitHub Public Repository:

<https://github.com/yashpatil118/Autonomous-drone-system.git>

1. Demo Video Link :

https://drive.google.com/file/d/19_8J2IXLI7ZUU1skJag7mna4xCDhtu-s/view?usp=sharing

1. MVP Link :

<https://github.com/yashpatil118/Autonomous-drone-system.git>



Solution Challenge



Thank you

