



# Computer Science & Technology

## PROJECT PHASE 1 FINAL REVIEW

**Team No:** 2

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## AgriLink

### AI-Driven Solutions for Crop Marketplace and Disease Management: AgriLink

AgriLink assists farmers throughout the *entire farming process*—from detecting crop diseases using AI, enhancing their skills through a Learning Management System (LMS) and to help them list and sell their produce directly to retailers and consumers, removing middlemen for better profits.

## Abstract

AgriLink is a comprehensive platform designed to help farmers at every stage of farming. It offers AI-driven crop disease detection, a Learning Management System (LMS) for continuous education, and for listing, negotiating, and transacting produce directly with buyers. By removing intermediaries, AgriLink ensures that farmers get the profits they deserve, while also enhancing their productivity and knowledge.

## Introduction

Farming is not just about growing crops—today, it encompasses disease management, skill enhancement, and ensuring fair market access. Many farmers struggle with detecting crop diseases early, accessing modern farming techniques, and navigating the market without losing profits to middlemen. AgriLink addresses these challenges by providing an AI-powered solution for **crop disease detection**, an **LMS for learning** farming best practices, and a **market platform** that helps farmers sell directly to retailers and consumers, ensuring better financial returns.

# Literature Survey

Research Paper	Gap	Need
Mobile-Based Agricultural Apps for Farmers' Welfare in India <b>(Manobharathi K, 2021)</b>	Low adoption of ICT tools due to limited digital literacy and reliance on middlemen.	User-friendly, real-time mobile apps providing market, weather, and expert advisory services.
A Study of E-Marketing Apps for Agricultural Products <b>(Kajal V. Khandagale, 2022)</b>	Inefficiency, price manipulation, and reliance on middlemen in agricultural markets.	Digital platforms that offer transparency, reduce marketing costs, and provide real-time data.
Android App for Farmers to Sell Their Crops <b>(Vamsidhar Reddy et al., 2023)</b>	Existing apps include intermediaries, reducing farmers' profits.	Direct platforms allowing farmers to sell crops without middlemen, with added features like soil and weather data.
Developing a Crop Disease Detection using Deep Learning <b>(Rahul Papalkar, Abhishek Mane, 2023)</b>	Limited real-time disease detection	Realtime crop monitoring system with solutions.

## Research Gap

### Key aspects:

- **Limited Adoption:** Farmers are not widely adopting current digital platforms due to their complexity and reliance on intermediaries.
- **Lack of Personalized Support:** Most apps fail to offer AI-driven recommendations that provide customized pricing and market insights based on real-time data.
- **Missing Voice Assistance:** No existing apps fully integrate voice assistance for farmers with low digital literacy, limiting accessibility.

### Our Solution:

- AgriLink fills the gap by offering an AI-powered, voice-assisted platform that simplifies market access for farmers, provides personalized recommendations, and ensures ease of use through voice navigation.

## Problem Statement

Farmers face multiple barriers in selling and growing their produce, including:

- Middlemen driving up costs and reducing profits.
- Limited access to wider markets, especially for small scale farmers.
- Complex digital platforms that are not designed for users with low technical literacy.

Our solution tackles these challenges by providing a simple, localized app that streamlines the entire process from listing produce to final transactions, all while enhancing the learning experience for farmers.

## Objectives & Methodology

- Disease Detection:

AgriLink will help farmers detect crop diseases early by using AI to analyze images of crops and provide quick diagnoses and treatment recommendations, making disease management easier and more efficient.

- Learning Management System (LMS):

The platform includes a built-in learning system where farmers can access tutorials, expert advice, and best practices on crop management, helping them improve their skills and knowledge.

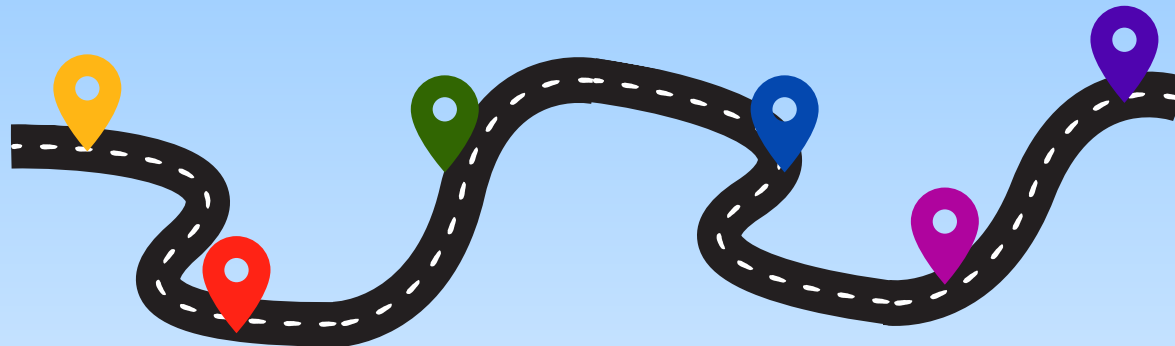
- Voice Assistance:

With voice assistance, farmers can navigate the app, get recommendations, and manage their farms through simple voice commands, making it accessible to those with limited technical skills.



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## RoadMap

**1**

### RESEARCH & REQUIREMENT GATHERING

- Study farmers' needs, market trends, and user personas.
- Identify the core features and prioritize them based on user impact.

**2**

### WIREFRAMING

- Create wireframes for key screens (home, produce listing, transaction, AI recommendations, etc.).
- Ensure mockups incorporate voice assistance and multilanguage support.

**3**

### USER FEEDBACK & ITERATION

- Share mockups to potential users (farmers, retailers).
- Gather feedback and iterate on designs to ensure simplicity and functionality.

**4**

### DEVELOPMENT

- Set up backend and frontend architecture.
- Implement AI-powered recommendation engine.
- Integrate voice assistance (Google Speech API) and Firebase for data storage.

**5**

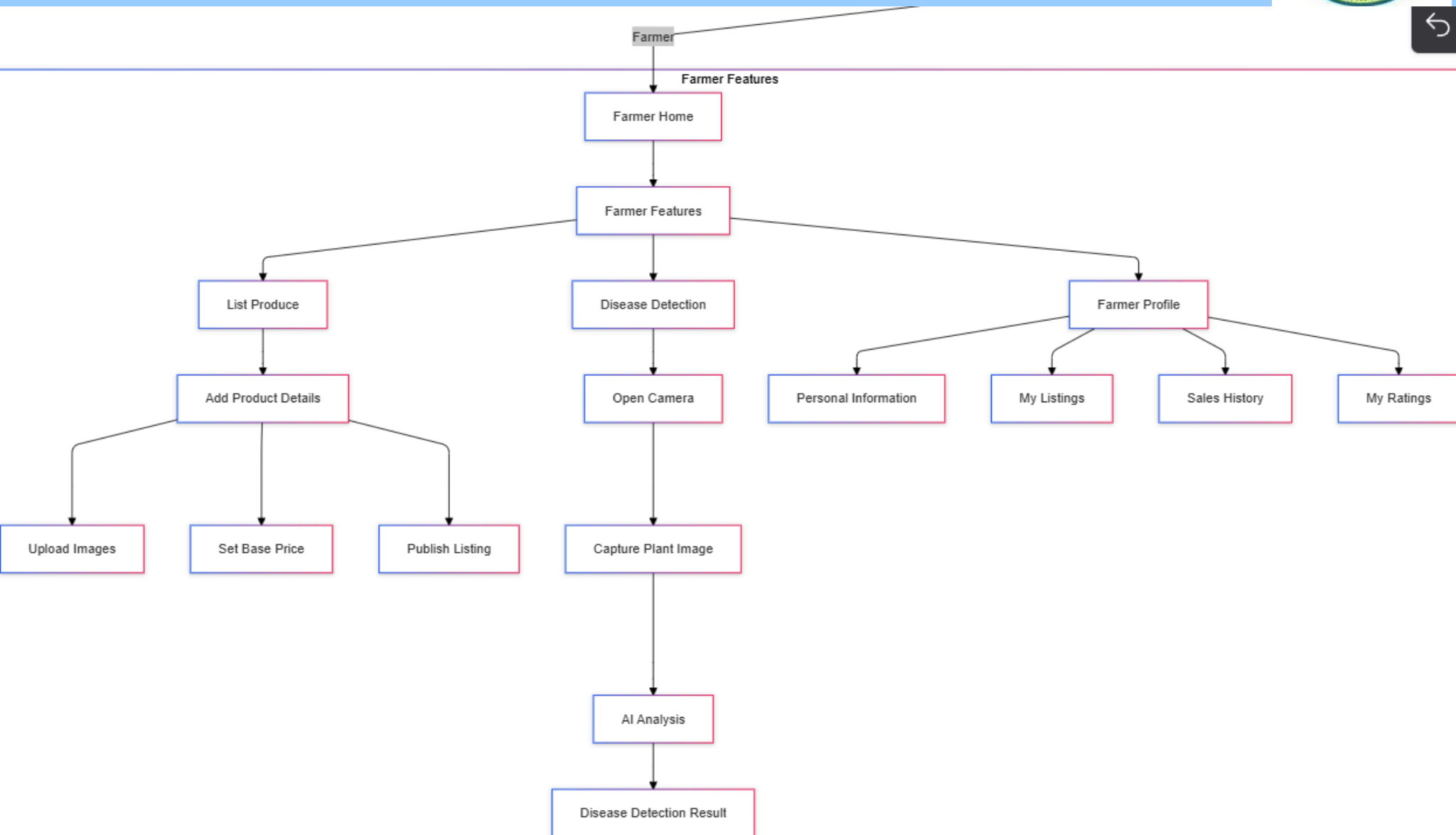
### TESTING

- Conduct unit testing, integration testing, and user acceptance testing (UAT) for all modules.
- Ensure compatibility with various devices and offline functionality in low connectivity areas

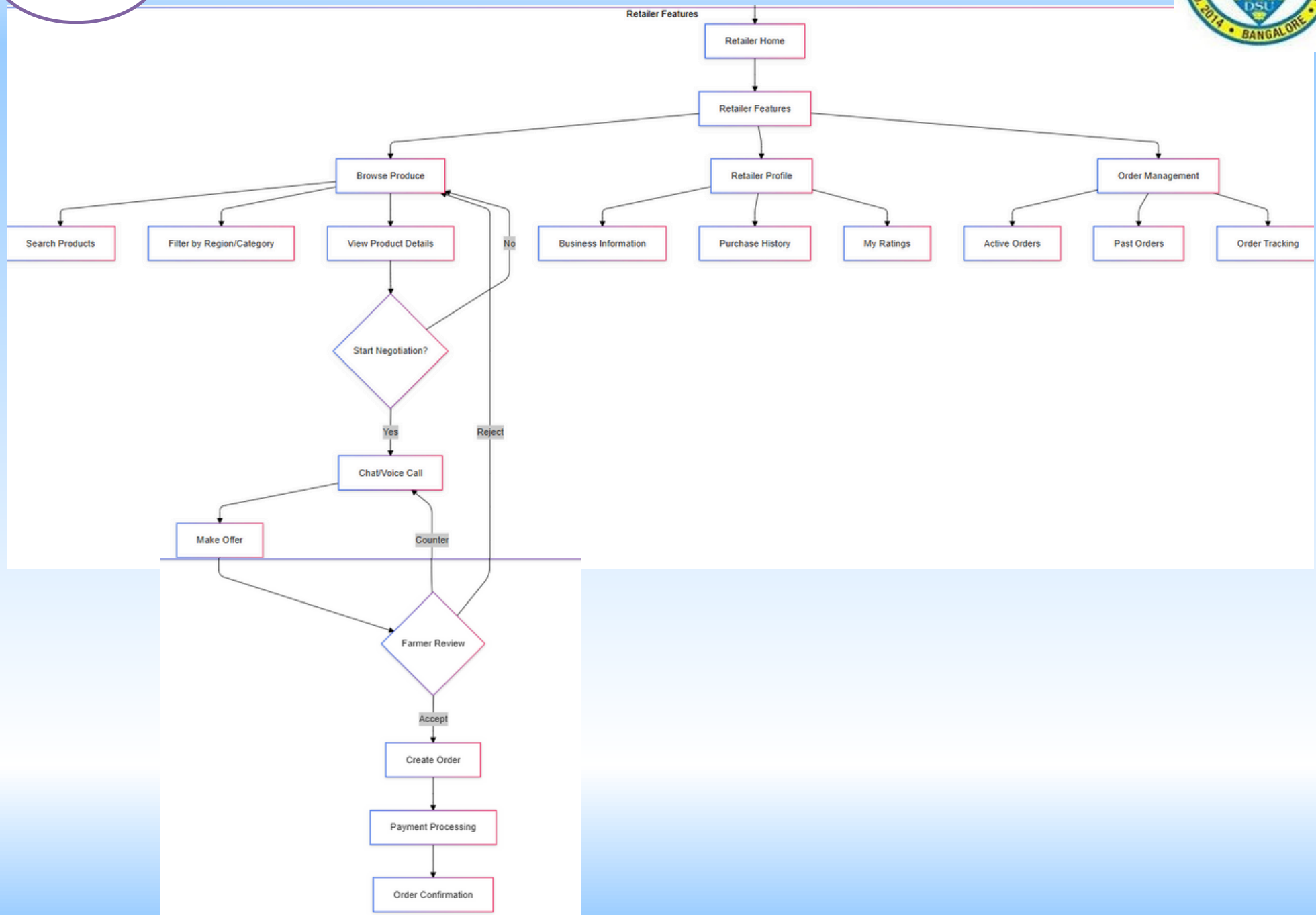
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### DEPLOYMENT & FUTURE

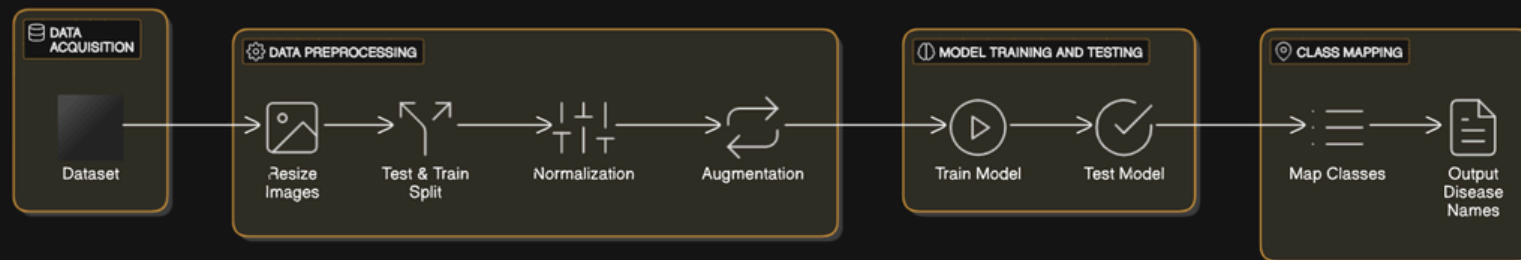
- Host on AWS, ensure scalability and security measures are in place.
- Pilot the app in a few regions and gather user feedback for improvements.
- Expand LMS content, introduce financial tools, and scale AI recommendations.



# Flowchart



# Architecture of Disease Detection



**POC**

**Design A**

**Design B**

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## References

 Farm Interview Audio

 Existing apps

 Field Visit Report

### **Farm Field Trip 1 Summary- 17/09/24**

1. Farmers make higher profits selling locally due to no commission fees, but when selling to cities like Bangalore, they must arrange transportation and pay a 10% commission. City prices are fixed based on grading- but middlemen have a fixed commission rate that farmers cannot negotiate.
2. Farmers need information about new fruits entering the market.
3. Farmers expect specialists to visit regularly (1-2 days) to monitor crop health, but currently, specialists only visit every three months- and they have to call them in advance.
4. Farmers need more awareness about crop diseases and how to treat them.
5. Milk is given to companies like Nandini after one day of storage.
6. Farmers want to upload photos and descriptions of their products (e.g., organic fertilizers) to market them directly to shops without middlemen, as they lack time to check quality themselves.
7. Farmers find it risky to sell products to cafes.