SRES SANJIVANI COLLEGE OF ENGINEERING

(An Autonomous Institute)

DEPARTMENT OF COMPUTER ENGINEERING

Final Year B.Tech Project Synopsis

Academic Year 2025-2026

Group ID : 18

Project Title : "KrishiConnect: The Smart Advisory App for Sustainable Farming

1. Project Definition

The Smart Advisory App for Sustainable Farming is a mobile-based application designed to assist farmers in making informed, timely, and eco-friendly agricultural decisions. The system integrates real-time weather alerts, soil health advice, organic farming techniques, and expert consultation into a single, easy-to-use platform.

The app enables farmers to input their soil and crop details to receive personalized recommendations, access step-by-step organic farming guides, and get instant assistance through an AI-powered ChatBot or live expert chat. Real-time data is collected through third-party APIs for weather and soil conditions, while the backend system processes and delivers customized insights to the user's mobile device.

The primary goal of the project is to bridge the gap between traditional farming practices and modern agricultural technology by offering farmers an accessible tool that promotes sustainable, chemical-free, and high-quality crop production. In its initial phase, the system will focus on Android users, with future enhancements including AI-based plant disease detection, IoT sensor integration, multilingual support, and market price tracking for organic produce.

2. Scope

The Smart Advisory App for Sustainable Farming aims to provide farmers with an integrated, easy-to-use mobile platform that supports sustainable, organic, and eco-friendly agricultural practices. The app will focus on small and medium-scale farmers, especially in rural areas, to help them improve productivity, reduce chemical usage, and adapt to climate challenges through technology-driven solutions.

- Android-based mobile application with a simple, farmer-friendly interface.
- Real-time weather alerts and forecasts tailored to specific regions.
- Soil health advice based on farmer inputs and database knowledge.
- Step-by-step organic farming methods and seasonal tips.
- AI ChatBot for answering common farming queries.
- Basic expert chat system for professional guidance.
- Farming calendar with reminders for sowing, irrigation, and harves

3. Objectives

1. **Integrate All Government Schemes** – Provide timely, region-specific information on active government policies, subsidies, loan programs, and farmer welfare initiatives to ensure that users can maximize benefits from available resources.
2. **Deliver Daily Market Rate Updates** – Offer real-time commodity price tracking for various agricultural products, enabling farmers to make informed selling and storage decisions to maximize profitability.
3. **Implement an AI-Driven ChatBot** – Facilitate 24/7 farmer interaction in multiple languages through a conversational interface capable of answering queries related to farming practices, pest control, crop selection, and government schemes.
4. **Enable a Weather Alert System** – Integrate meteorological data to deliver localized weather forecasts and critical alerts (rainfall, storms, and temperature extremes), supporting climate-smart agriculture and preventive measures.
5. **Provide Soil and Crop Advisory** – Utilize machine learning models and soil nutrient analysis to recommend suitable crops, fertilizers, and irrigation schedules tailored to specific soil conditions.
6. **Offer Organic Farming Guidance** – Promote sustainable agricultural practices by delivering step-by-step guidance on organic farming methods, natural pest control, and eco-friendly crop management techniques.

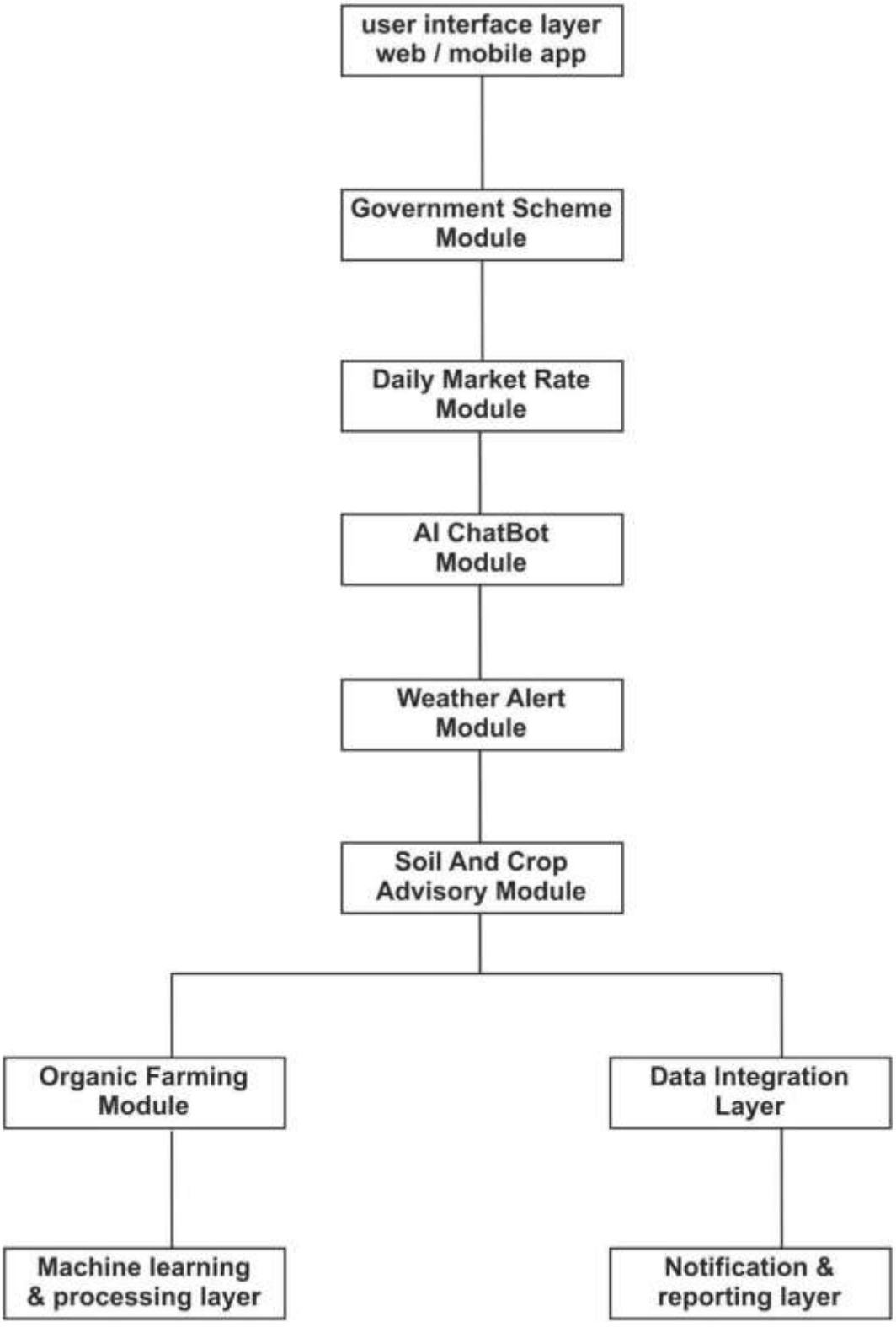
4. Review of Conference / Journal Papers and Relevant Theory

Paper 1 – "ICT-based Information Services for Farmers" (International Journal of Agricultural Sciences, 2020)
This study emphasizes how mobile applications can bridge the gap between farmers and agricultural experts, reducing information delays and enhancing decision-making. The authors highlight the need for localized, language-specific, and real-time data delivery, which is directly relevant to our project's multilingual and weather alert features.

Paper 2 – "AI and Machine Learning for Precision Agriculture" (IEEE Conference on Smart Farming, 2021)
The paper discusses how AI algorithms can analyze soil, weather, and crop images to recommend suitable farming practices. It also notes that while such systems show promise, lack of quality training data and internet limitations in rural areas remain major challenges—issues that our proposed offline support and local data collection aim to address.

Paper 3 – "Role of Mobile Apps in Promoting Organic Farming" (Journal of Sustainable Agriculture, 2019)
This research focuses on mobile apps designed for organic farmers, highlighting that user interface simplicity, practical tips, and expert interaction are crucial for adoption. This supports our design approach of making the app farmer-friendly and offering direct expert chat support.

5. System Architecture



6. System Requirement

a. Hardware Requirement

- Used for coding, testing, and compiling the mobile app and backend services.
- Processor: Intel Core i5 or higher (or equivalent AMD Ryzen 5+)
- RAM: Minimum 8 GB (16 GB recommended for smooth performance)
- Storage: Minimum 256 GB SSD
- Graphics: Integrated GPU sufficient (dedicated GPU optional for AI model training)
- OS: Windows 10/11, macOS, or Linux (Ubuntu preferred for backend)

b. Software Requirement

To build and deploy the Smart Advisory App, various software tools and platforms will be used for frontend, backend, database management, API integration, and optional AI or IoT features. Below is a breakdown of the required software components.

1. Operating System

- Development Environment (IDE):
- Windows 10/11, macOS, or Linux (Ubuntu recommended for backend and server setup)

2. Mobile App Development Tools

- Framework: Flutter or React Native
- (For cross-platform Android and iOS app development)

- IDE (Integrated Development Environment):
- Android Studio (for Android)
- Visual Studio Code (for Flutter/React Native)
- Emulators/Simulators:
- Android Emulator
- IOS Simulator (on macOS)

3. Backend Development

- Programming Language: .Net / ASP.Net / Python (Django) or JavaScript (Node.js + Express)
- API Frameworks:
- Django REST Framework or Express.js
- Database: MSSQL, MySQL
- Firebase Real-time DB / Firestore (for real-time cloud storage)
- OR PostgreSQL / MySQL (for relational storage)

4. External Services and APIs

- Weather API: OpenWeatherMap or IMD API
- Map & Location API: Google Maps API (for region-based recommendations)
- AI Integration (Optional):
- TensorFlow Lite / OpenCV (for image recognition)
- Dialog flow or GPT-based API (for ChatBot)

7. Conclusion

The Smart Advisory App for Sustainable Farming is designed to bridge the gap between traditional agricultural practices and modern technology. By integrating real-time weather alerts, soil health advice, organic farming techniques, and expert consultation into a single mobile platform, the system empowers farmers to make timely, informed, and eco-friendly decisions.

This project not only promotes sustainable and organic farming but also addresses critical challenges such as unpredictable weather, soil degradation, and lack of expert guidance in rural areas. With its user-friendly interface, location-specific recommendations, and future potential for AI and IoT integration, the app has the capacity to transform farming into a more productive, profitable, and environmentally responsible activity.

In the long run, adopting such digital advisory systems can significantly contribute to food security, rural development, and environmental conservation, ensuring that farmers remain resilient in the face of climate change and market uncertainties.

8. Reference

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