

PSCS59-UPLIFTING THE FARMER THROUGH A CONNECTED ECOSYSTEM

Batch Number:CSD-G37

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Name of the Program: Data Science

Name of the HoD:

Name of the Program Project Coordinators: . Chandrasekar Vaidivelraj

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Problem Statement Number:

Farmers face numerous challenges when it comes to managing their resources, accessing markets, and maximizing production. The need for an efficient system that integrates agricultural tools and platforms into one comprehensive ecosystem is essential for empowering farmers. This project aims to create an ecosystem that helps farmers with various aspects of their operations, including crop management, crop planning, market access, and other areas to boost their productivity and sustainability.



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Analysis of Problem Statement

- **Resource Management:** Many farmers struggle with managing their limited resources like water, fertilizers, and energy efficiently.
- **Market Access:** Reaching appropriate markets for selling products is a challenge for farmers due to the lack of information and the presence of intermediaries.
- **Technology Integration:** Farmers need a user-friendly platform to access information on crop health, weather patterns, and farming practices, often lacking in current solutions.
- **Sustainability:** There is a growing need for sustainable agricultural practices that maximize productivity while minimizing environmental impacts.



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Timeline of the Project (Gantt Chart)

Phase	Tasks	Duration
Phase 1	Project Planning, Requirements Gathering	2 Weeks
Phase 2	System Design and Architecture Creation	1 Weeks
Phase 3	Frontend and Backend Development	2 Weeks
Phase 4	AI/ML Model Integration for Predictive Analytics	2 Weeks
Phase 5	Testing and Quality Assurance	1 Weeks



Tech Stack

- **Frontend:**
 - **Framework:** React Native (for mobile app development)
 - **UI Library:** React Native Paper or NativeBase (for UI components)
 - **Navigation:** React Navigation (for managing different screens)
 - **State Management:** Redux or Context API (for global state management)
- **Backend:**
 - **Server:** Node.js with Express (for API creation)
 - **Database:**
 - **SQL:** PostgreSQL (for structured data like user and inventory management)
 - **NoSQL:** MongoDB (for unstructured data like logs, weather patterns, etc.)
 - **AI/ML Integration:** TensorFlow.js for AI/ML models and Python (Flask/FastAPI) for training
 - **Authentication:** JWT-based authentication (for user login and security)
 - **Cloud Storage:** AWS S3 or Google Cloud Storage (for storing files like crop images and reports)
- **AI/ML:**
 - **Model:** Time Series Forecasting models (e.g., LSTM, ARIMA) for crop and resource demand
 - **Technology:** TensorFlow/Keras (for model training) and Google Cloud AI Platform (for deployment)
- **Cloud Platform:**
 - **Infrastructure:** Google Cloud Platform or AWS (for hosting backend services, databases, and APIs)
 - **Serverless Functions:** Google Cloud Functions or AWS Lambda (for serverless backend operations)



References (IEEE Paper format)

- Online resources for sustainable farming practices.
- Case studies on farmer ecosystems from government agricultural boards.



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