

FarmEkoX: Smart Crop Advisory System for Small and Marginal Farmers.

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Problem Statement Number:

Problem Description: Small and marginal farmers in India often rely on traditional guesswork or informal advice for crop and nutrient management, lacking access to personalized, data-driven insights. This absence of real-time guidance regarding soil health, weather, and crop history leads to low yields, high input costs, and environmental damage. Furthermore, existing digital tools are often hindered by complex interfaces and language barriers. There is a critical need for an integrated, multi-lingual platform providing AI-powered voice advisory and precision tools to bridge the digital divide for farmers in the Punjab region.



Background and Related work for title Selection

- Study of Existing Agriculture Advisory Applications: Applications such as Plantix, AgriApp, and IFFCO Kisan provide services including crop information, basic advisory support, weather updates, and market price information for farmers.
- Review of Technology-Driven Agriculture Solutions: Recent studies and implementations highlight the use of digital platforms and artificial intelligence for crop recommendation, fertilizer management, and weather-based advisory systems.
- Limitations of Current Digital Solutions for Small Farmers: Most existing platforms face challenges such as limited personalization, lack of local language voice support, absence of fertilizer precision tools, and poor usability for small and marginal farmers.
- Need for a Unified Smart Crop Advisory Platform: The analysis of related work indicates the necessity for an integrated system that combines crop advisory, weather alerts, fertilizer planning, market information, and expert support in a single mobile application.



Objectives:

- Easy Registration: Develop a simple and user-friendly registration process that allows farmers to access the system quickly with minimal digital skills and effort.
- Season-wise Crop Recommendation: Provide intelligent crop recommendations based on season, location, and climatic conditions to help farmers select suitable crops.
 - Crop Calendar View: Offer a structured crop calendar that guides farmers on sowing, irrigation, fertilization, and harvesting schedules..
 - 7-Day Local Weather Forecast: Deliver accurate, location-specific weather forecasts to support better planning of daily farming activities.



Objectives:

- Rain Alerts - Skip Irrigation: Notify farmers about upcoming rainfall and advise skipping irrigation to conserve water and reduce operational costs.
- Fertilizer Dose Calculator: Barcode-based fertilizer identification enables farmers to scan fertilizer barcodes using a mobile camera to automatically identify fertilizer type, nutrient composition, and product details.
- Today's News and Mandi Prices: Provide real-time agricultural news and mandi price updates to help farmers make informed selling decisions.
- AI Voice and Chat Advisory in Local Language: Integrate an AI-based voice and chat assistant that offers farming guidance in local languages for improved accessibility.
- Ask Expert Button: Enable farmers to connect directly with agricultural experts for personalized advice and problem resolution.
- Nearby Resources Locator: Help farmers locate nearby seed stores, fertilizer shops, mandis, and other agricultural resources using location-based services.
- Multi-Language Interface: Support multiple regional languages to ensure inclusivity and ease of use for farmers from diverse linguistic backgrounds.



Analysis of Problem Statement

- Decision Gap: Farmers rely on guesswork and informal advice instead of data-driven insights for crop selection and pest control.
- Resource Wastage: Lack of precision tools leads to the overuse of water and fertilizers, increasing costs and damaging soil health.
- Accessibility Barriers: Complex digital interfaces and language gaps prevent marginal farmers from using existing agricultural technology.
- Localized Neglect: General apps often fail to provide the specific mandi prices, weather alerts, and dialects unique to the Punjab region.

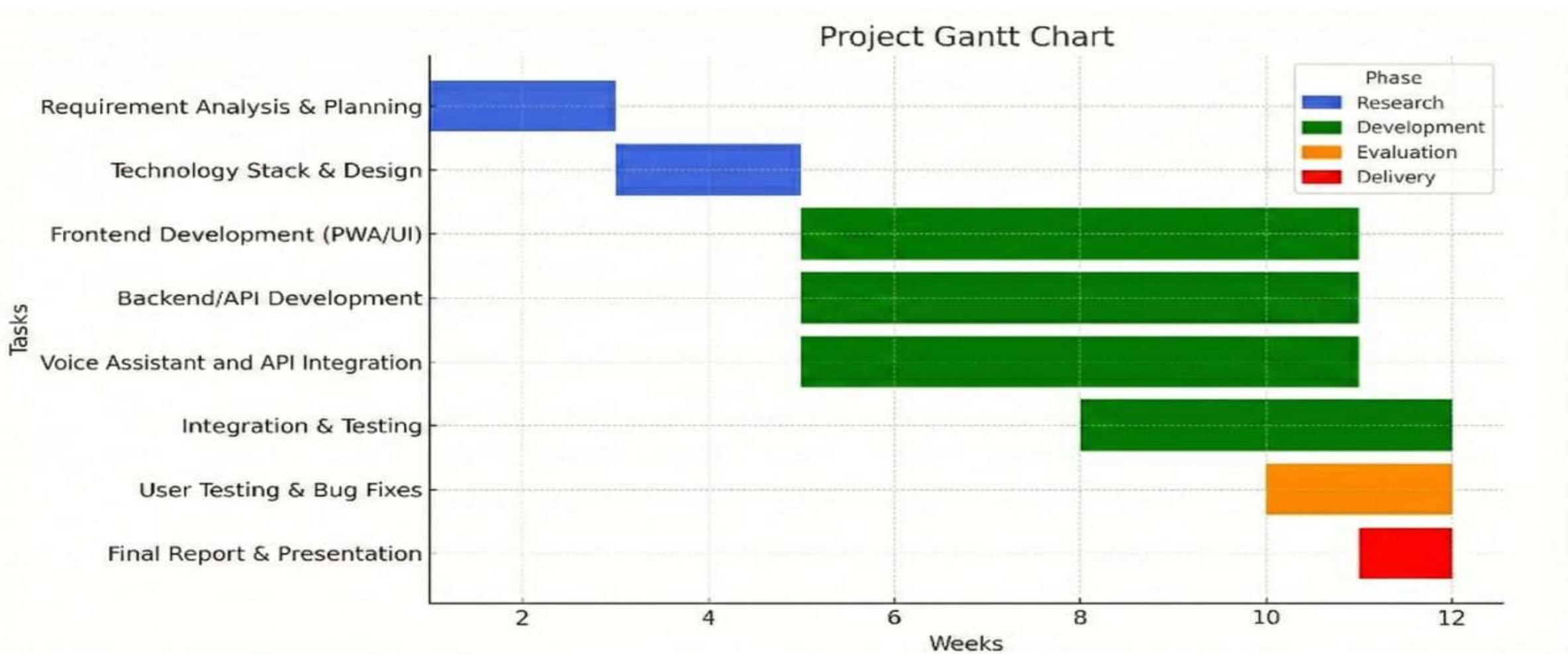


Innovation or Novel Contributions

- AI Voice Assistant: Provides crop advisory through voice interaction in local languages.
- Barcode Fertilizer Calculator: Calculates accurate fertilizer dosage by scanning product barcodes.
- Smart Irrigation Alerts: Sends rain alerts to avoid unnecessary irrigation.
- Integrated Advisory Platform: Combines crop, fertilizer, market, and expert support in one app.
- Farmer-Friendly Interface: Simple, multi-language design for small and marginal farmers.



Timeline of the Project (Gantt Chart)



Github Link

Github Link

git@github.com:https://github.com/ArunkumarK572/FarmEkoX

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Thank
You!