

Problem statement: The traditional Agriculture practices lack real time monitoring and efficient operation on fields this leads to inefficiencies and low production levels.

The expanding population and the consequences of climate change place a heavy burden on the agriculture sector. A website/android app that enables real-time farm monitoring has been developed to give farmers a full solution.

Every single section of the app is designed with a unique objective in mind.

1) Object Tracking: The application has an advanced object tracking feature that enables farmers to keep track of the objects in their fields and to monitor them and notify the user about any possible alerts and storing the relevant data on the cloud. If any possible intruders enter the field, the buzzers will ring scaring the animals or entities.

2) Inventory Management: By offering a system to track the stock of seeds, fertilizers, equipment, and other farm supplies, SMART FARMING makes inventory management simpler. It aids in purchase planning and lowers the possibility of overstocking or understocking. Additionally, it gives an insight to the user about the yield profits and helps visualizing the vast data. This app also caters to the requirements associated with managing farm animals. It aids farmers in keeping track of the feeding schedules and real time location tracking. This feature attempts to maximize the productivity of the animals and ensure their well-being.

3) Control of irrigation and soil moisture: SMART FARMING has a feature for keeping track of the temperature and controlling irrigation since it recognizes how heavily climatic factors affect farming. Real-time weather updates are provided via APIs, and farmers are able to schedule irrigation based on weather forecasts and soil moisture levels and crop types.

4) Pest Management: The Pest Management module is designed to help users in the monitoring of pesticide applications, offering timely reminders for optimal pest control. Additionally, it incorporates an advanced feature that utilizes image recognition technology to identify potential pest types by analyzing images of plants exhibiting signs of infestation.

5) Plant Nutrients Tracking: The Plant Nutrient Tracker module, an advanced solution, is used to facilitate users in the real-time monitoring and management of nutrient levels in their cultivated plants. This sophisticated system not only maintains a comprehensive database of the nutrient profiles, but also sends alerts to the user in the event of any deficiencies detected in the critical ratios of potassium, nitrogen, and phosphorus. These alerts are triggered by an image analysis algorithm that processes images captured either manually by the user or automatically by strategically positioned cameras focused on the plants.

Keywords: Cloud-based Storage or Computing, IOT, ML, Image Processing, Detecting Devices, Mobile Applications, Deep Learning.

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