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Smart Farming System

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A B S T R A C T

The purpose of Farming management system is to automate the existing farming system by advanced features such as whether detection, temperature detection, prediction of whether, suggestion of crop as per given whether, count intensity of light and measure PH value of soil. The Farming Management System is a comprehensive digital solution designed to streamline and optimize agricultural operations for modern farmers. This innovative software application leverages cutting edge technology to enhance the efficiency, productivity, and sustainability of farming practices. The required software and hardware system is easily available for this project and it is secure, reliable system to make smart farming..

1. Introduction

The purpose of Farming management system is to automate the existing farming system by adavanced features such as whether detection temperature detection and prediction of a whether as per their requirements. The required software and hardware system is easily available for this project and it is secure, reliable system to make smart farming. The Farming Management System aims to revolutionize traditional farming practices by implementing cutting-edge technology and advanced features. This comprehensive system seeks to enhance efficiency and productivity in agriculture through the integration of software and hardware components. One of the primary objectives is to automate various aspects of farming, reducing the manual labor and human error involved. This includes automating irrigation based on weather conditions, monitoring soil moisture levels. The farm management system has been developed to override problems about farming .It eliminates the farming related errors this is farm management system which overcome challenges by predicting a good whether. It give more production. It helps to improve a way of farming .

A Farm Management System with temperature, humidity, and light monitoring is a modern solution designed to optimize agricultural practices. By integrating advanced sensors and technology, it allows farmers to closely monitor and control environmental conditions within their farm, ensuring optimal growth and yield for crops and livestock. Thissystem provides real-time data on temperature, humidity, and light levels, enabling farmers to make informed decisions, automate processes, and ultimately improve the overall productivity and sustainability of their farm operations.In addition to monitoring temperature, humidity, and light levels, a Farm Management System can offer several valuable features. It often includes data logging and analysis tools, enabling farmers to track historical trends and make data-driven decisions for crop rotation, irrigation scheduling, and pest management. Some systems also integrate withweatherforecaststo help farmers plan activities more effectively. This includes automating irrigation based on weather conditions, monitoring soil moisture levels. The farm management system has been developed to override problems about farming .It eliminates the farming related errors this is farm management system which overcome challenges by predicting a good whether. It give more production. It helps to improve a way of farming

Moreover, these systems may offer remote access and alerts through mobile apps or web interfaces, allowing farmers to keep an eye on their farm even when they are not physically present. This feature enhances convenience and enables timely responses to unexpected changes in environmental conditions.Overall, a Farm Management System with temperature, humidity, and light checking empowers farmers to enhance crop quality, reduce resource waste, and increase their overall yield, contributing to more sustainable and profitable agricultural practices

2. Literature Survey-

Smart Agriculture to Measure Humidity, Temperature, Moisture, Ph. and Nutrient Values of the Soil using IoT: Asadi Venkata Mutyalamma, Gopisetty Yoshitha, Althi Dakshyani, Bachala Venkata Padmavath.

Smart Agriculture now-a-days reducing various problems in farming. Farmers get required information and relative data to monitor the plants growth by the use of "INTERNET OF THINGS (IOT)", which connects the different sensors, actuators and other embedded devices. To provide quality crops based on soil nutrient level and its moisture content along with Ph. factor, also been maintained. Hence, in this project all those parameters are detected and controlled with the help of micro controller. Humidity sensor to detect the moisture content, where colour sensor is used to determine the percentage of soil nutrients (N2, P4 &K). It will analyse soil nutrient content present in soil at real time and Ph. sensor is used to determine the Ph value of the soil.

Monitrring of these it provides the proper fertility to the soil depending upon the soil nutrients. GSM is used to display the information to the farmers. Thus it reduces the growing of husk in terms of wastage and thereby getting good quality and healthy crops.

Management information system adoption at the farm level: -Carlo Giua Sciences, "Valentina Cristiana Materia Luca Camanzi

"Abstract Purpose – This paper reviews the academic contributions that have emerged to date on the broad definition of farm-level management information systems (MISs). The purpose is twofold: (1) to identify the theories used in the literature to study the adoption of digital technologies and (2) to identify the drivers of and barriers to the adoption of such technologies. Design/methodology/approach – The literature review was based on a comprehensive review of contributions published in the 1998– 2019 period. The search was both automated and manual, browsing through references of works previously found via high-quality digital libraries. Findings – Diffusion of innovations (DOIs) is the most frequently used theoretical framework in the literature reviewed, though it is often combined with other innovation adoption theories. In addition, farms' and farmers' traits, together with technological features, play a key role in explaining the adoption of these technologies. Research limitations/implications – So far, research has positioned the determinants of digital technology adoption mainly within the boundaries of the farm. Practical implications – On the practical level, the extensive determinants' review has potential to serve the aim of policymakers and technology industries, to clearly and thoroughly understand adoption dynamics and elaborate specific strategies to deal with them

3. Methodology

Soil and Humidity Detection :

• Use thermosensors, like Arduino, to detect soil humidity and temperature

. • Implement a data acquisition system to collect and store sensor readings.

• Utilize algorithms to analyze the data for patterns and trends in soil conditions.

PH value and light intensity:

• PH sensor measure the acidity or alkalinity of a soil.

• It monitors soil PH which cal greatly influence of crop health.

• Light sensor measure intensity of light in farm environment.

• It will helps to a crop selection planting and adjusting irrigation pattern.

Weather Prediction for Farming:

• Access weather data from reliable sources or use APIs for real-time weather information.

• Develop algorithms to analyze weather data and predict the upcoming weather conditions.

• Integrate the weather prediction system with the farming management system to provide timely weather forecasts.

4. Objectives-

Objective 1: To check humidity by sensor

Objective 2: To check soil temperature by thermosensor

Objective 3: To check light intensity by light sensor.

Objective 4: Predict the suitable whether

Objective 5: Suggest crop which is suitable for the given soil sample according to whether for more production

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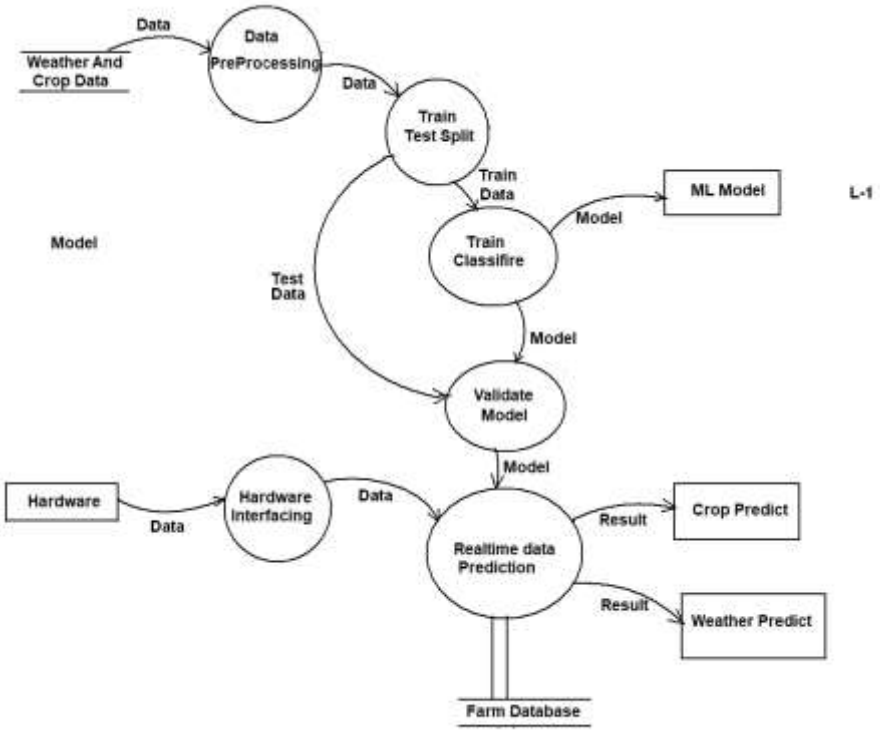

5. Technologies Used –

Sensor Technology: Sensors are used to measure temperature, humidity, and light levels in various areas of the farm. These sensors can be distributed throughout the farm to gather real-time data.

Data Collection and IoT (Internet of Things): The sensor data is collected and transmitted using IoT technology. This data can be sent to a central control system or a cloud-based platform for processing.

Crop Suggestion Models: Crop suggestion models are developed based on the collected data, historical performance, and external factors like climate and soil conditions. These models recommend suitable crops for specific areas of the farm.

Historical Data Storage: Data collected over time is stored for historical analysis and to improve the accuracy of future crop recommendations.

Crop Rotation Planning: In addition to suggesting crops for the current season, the system can assist with long-term planning. It may recommend crop rotation strategies to maintain soil health and prevent diseases.

6. Future Scope -

A farm management system that incorporates light sensors and humidity sensors holds significant potential for the future of agriculture. This technology, often referred to as precision agriculture or smart farming, can greatly enhance the efficiency, productivity, and sustainability of agricultural practices. Here are some future scopes and possibilities for a farm management system utilizing light sensors and humidity sensors:

1. Optimized Crop Production:

- Precision Irrigation: Sensors can measure soil moisture levels and humidity, enabling precise irrigation based on actual plant needs, conserving water and reducing costs.

- Light Optimization: Light sensors can monitor sunlight levels, helping farmers optimize planting patterns and choose the right crops for specific areas of the farm. This data can be used to create controlled environments for crops that require specific light conditions.

2. Crop Monitoring and Disease Prevention:

- Early Disease Detection: Abnormal humidity levels can indicate the onset of diseases. Coupled with other data sources, farmers can receive early warnings, allowing timely interventions to prevent crop diseases.

- Pest Control: Monitoring humidity can also help in predicting pest infestations. Integrated pest management strategies can be employed based on real-time sensor data, reducing the need for chemical interventions.

3. Resource Management:

- Energy Conservation: Light sensors can automate greenhouse lighting systems, optimizing energy usage and creating ideal conditions for plant growth.

- Water Conservation: By precisely measuring humidity and soil moisture, farmers can implement drip irrigation systems, minimizing water wastage and ensuring that crops receive an optimal amount of water.

4. Data-Driven Decision Making:

- Data Analytics: Collected sensor data can be analyzed to gain insights into crop behavior, climate patterns, and soil health. Machine learning algorithms can be applied to predict optimal planting times, yield estimations, and suggest crop rotations.

- Remote Monitoring: Farmers can monitor sensor data remotely through mobile apps or web interfaces, enabling real-time decision-making even when they are not physically present on the farm.

5. Integration with IoT and Automation:

- IoT Integration: Integrating light and humidity sensors with other IoT devices such as drones and autonomous machinery can create a fully automated farm system. Drones equipped with sensors can provide aerial insights, further enhancing farm management.

- Smart Greenhouses: In controlled environments like greenhouses, sensors can regulate light, humidity, and temperature automatically, ensuring optimal conditions for plant growth.

7. Conclusion

In conclusion, the Farming Management System (FMS) serves the crucial purpose of automating and modernizing traditional farming practices through advanced features like weather detection, temperature monitoring and crop detection. This system leverages readily available software and hardware solutions, making it accessible to farmers of varying technological backgrounds. Its emphasis on security and reliability ensures the trustworthiness of the FMS, enabling the transition towards smart farming. Overall, the FMS represents a transformative step towards more efficient, sustainable, and productive agriculture, ultimately benefitting both farmers and the agricultural industry as a whole.

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