ROEVER ENGINEERING COLLEGE (Approved by AICTE and Affiliated to Anna University)
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LITERATURE SURVEY

IOT BASED FOR SMART AGRICULTURE

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LITERATURE SURVEY

An ISM-Band Automated Irrigation System for Agriculture IoT

In this paper,an expensive and user-friendly agriculture automation system is proposed by networking a collection of sensors and actuators to sense the moisture content of the soil and control the water valves for mutiple irrigation zones. Using freely available frequencies in the Industrial, Scientific, and Medical (ISM) bands, multiple sensors and actuators can be networked to communicate with one another without the need to pay for subscriptions to existing cellular networks. Each sensor and actuator connect to a central communication node which connects the end-user to the sensors and actuators through a cloud server. The proposed system can act as a base for large-scale smart agriculture deployments.

ADVANTAGE;

1. Improved data collection driving farming efficiency. The agricultural sector is in a race today..
2. End-to-end production control...
3. Reduced wastage and cost management....
4. Process automation.
5. Accentuated product quality.

DISADVANTAGE;

- One huge disadvantage of smart farming is that it requires an unlimited or continuous internet connection to be successful. This means that in rural communities, especially in the developing countries where we have mass crop production, it is completely impossible to operate this farming method.

Referred by

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LITERATURE SURVEY

IoT Applications in Smart Agriculture: Issues and Challenges

The rapid development of Internet of Things (IoT) technologies created tsunamis almost in every industry across the world and particularly in agriculture. This massive changes are shaking the existing agriculture methods and creating new wave of opportunities. Due to the increase of world population by 30%, agriculture products will have a very high demand by 2050. Human resources for agriculture development is becoming less due to migration of young people to big cities and land use for agriculture cultivation is being used for rapid development. As a result, most of the agriculture activities need to be automated to fulfill the food demand. IoT and related technologies will be the potential solution to solve the above agricultural and food demand issues. This paper will explore the latest trends in IoT agriculture applications and highlight the issues and challenges particularly in network and open source software for smart agriculture.

ADVANTAGE

➨Solar powered and mobile operated pumps save cost of electricity

➨It is cost effective method.

➨It delivers high quality crop production.

DISADVANTAGE

➨The smart farming based equipments require farmers to understand and learn the use of technology. This is major challange in adopting smart agriculture farming at large scale across the countries

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LITERATURE SURVEY

A Blockchain Footprint for authentication of IoT Enabled Smart Devices in Smart Cities: State-of-the Art Advancements, Challenges and Future Research Directions

The mechanisms based on the distributed environment have become an obvious choice for solutions, while they have not been limited only to a specific domain (i.e., crypto-currency). Rather, it has influenced other industries to develop robust privacy and security solutions, such as smart houses, smart electrical grids, smart agriculture, smart health care, smart transportation, etc. These Cyber-Physical Systems heavily depend on IoT-based smart devices that constitute a networked system of devices dependent on each other for the smooth operation of the overall system. Hence, security and privacy have become integral to all the architectural frameworks they operate in. The adoption of these architectures, such as the Internet of Things (IoT), Internet of Cyber-Physical Things (IoCPT), Cyber Physical Systems (CPSS), and Internet of Everything (IoE), has reinforced the need to develop solutions based on a distributed environment. Distributed ledger technology, i.e., Blockchain, has taken the lead and may support the development of robust privacy and security solutions. We provide an updated review of authentication mechanisms developed on blockchain technology that enforce decentralized architectures.

ADVANTAGE

➨Smart agriculture use drones and robots which helps in many ways. These improves data collection process and helps in wireless monitoring and control.

➨It is cost effective method.

➨It delivers high quality crop production

DISADVANTAGE

➨The smart agriculture needs availability of internet continuously. Rural part of most of the developing countries do not fulfil this requirement. Moreover internet connection is slower.

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LITERATURE SURVEY

Hydroponic for smart agriculture using internet Of things (IOT)

Agriculture has become the most significant growing sector all over the world because of increasing the population. The main challenge in agriculture industry is to improving farming Efficiency and quality without constant physical monitoring to fill the speedily increasing demand for food. Apart from the mounting population, the climate circumstances is also a huge challenge in agriculture industry. The aim of this research paper is to propose a smart farming based on internet of things using the clustering to deal with the adverse condition. In this model, we use different types of sensors for different purpose. The data will be collected on the cloud and calculated automatically. The smart agriculture can be adopted from crop control, collection of useful data, and analysis automatically. The purpose of this paper is how the implement the internet of things (IOT) in the monitoring of humidity, soi, temperature, and supply of water to field, level of water, climate condition. The IOT based smart farming system being planned via this report is integrated with different sensors and a wi-fi module producing live data feed that can be obtained online.

WORK OF MODEL

- Temperature Sensor detected the temperature and as well humidity and sending the informationa to the node MCU for futher processing.
- PH Sensor detect the ph value of aqueous solution that we used in hydroponic prototype.
- Soola moisture sensors detected the moisture content and send the information to the Node MCU.
- Based on the inputs blynk app futher processing and send the auto information to the information.
- All these sensors are interfaced to an open source Node MCU which will act as a microcontroller.
- This microcontroller is also interfaced with 5V power supply. Value and solenoid pumps are being controlled by the Node MCU for efficient working of system.
- All this information is being send to a Blyny app. The controlling of whole system is automated using Node MCU and IoT system.

ADVANTAGES

- No Soils needed
- More better use of space and location
- Hydroponic Water - saving
- Effective use of neutering
- pH control of the solution
- Labor and time Saver

DISADVANTAGES

- Diseases and pets quickly

- Water and Electricity risk
- Organic Debates

REFERRED BY
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• 2021 international conference on parallel, distributed and grid computing

LITERATURE SURVEY

Smart Contract-Based Agricultural Food Supply Chain Traceability

The complexity of a supply chain makes product safety or quality issues extremely difficultto track, especially for the basic agricultural food supply chains of people's daily diets. The existing agricultural food supply chains present several major problems, such as numerous participants, inconvenient communication caused by long supply chain cycles, data distrust between participants and the centralized system. The emergence of blockchain technology effectively solves the pain-point problem existing in the traceability system of agricultural food supply chains. This paper proposes a framework based on the consortium and smart contracts to track and trace the workflow of agricultural food supply chains, implement traceability and shareability of supply chains, and break down the information islands between enterprises as much as possible to eliminate the need for the central institutions and agencies and improve the integrity of the transaction records, reliability and security.

Advantages:

** Traceability allows these countries and supply chains to confidently prove that their foods are safe and unrelated from any ongoing food safety incident. Traceability also helps eliminate illegal activities within the supply chain.*

** cost efficiency*

**. Enhance output*

**.Avoids delay in process*

Disadvantages:

**Expensive to implement. complecated.*

**Lack of co-ordination among departments.*

**Lack of relaibility*

Refered by,

X. Zhang, P. Sun, J. Xu, X. Wang, J. Yu, Z. Zhao, and Y. Dong, "Blockchain-based safety management system for the grain supply chain," IEEE Access, vol. 8, pp. 36398–36410, 2020.

[2] K. Salah, N. Nizamuddin, R. Jayaraman, and M. Omar, "Blockchain-based soybean traceability in agricultural supply chain," IEEE Access, vol. 7, pp. 73295–73305, 2019.

LITERATURE SURVEY

Agriculture monitoring and prediction using internet

Of things (IOT)

Agriculture has become the most significant growing sector all over the world because of increasing the population. The main challenge in agriculture industry is to improving farming Efficiency and quality without constant physical monitoring to fill the speedily increasing demand for food. Apart from the mounting population, the climate circumstances is also a huge challenge in agriculture industry. The aim of this research paper is to propose a smart farming based on internet of things using the clustering to deal with the adverse condition. In this model, we use different types of sensors for different purpose. The data will be collected on the cloud and calculated automatically. The smart agriculture can be adopted from crop control, collection of useful data, and analysis automatically. The purpose of this paper is how the implement the internet of things (IOT) in the monitoring of humidity, soi, temperature, and supply of water to field, level of water, climate condition. The IOT based smart farming system being planned via this report is integrated with different sensors and a wi-fi module producing live data feed that can be obtained online.

Working of model

Wireless data communication: the data is collected from the various sensor nodes and forwarded to server through wi-fi module

Sensor data attachments: the sensors are boundary with Adriano Uno board such as DHT11, temperature sensors, rain detection sensors, humidity and soil moisture

Data analysis & decision making

Automated irrigation system

Mobile application

Web application

ADVANTAGES

. improved data collection driving farming efficiency .

. resource optimization

. End to end protection control

. Reduced wastage and cost management

DISADVANTAGES

. it requires availability of internet continuously

. Rural part of most countries do not full fill this requirement of internet

. The smart farming based equipments requires farmers to understand and learn the use of technology

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- 2020 sixth international conference on parallel, distributed and grid computing