

Literature Survey on SmartFarmer – IoT Enabled Smart Farming Application

Category: Internet of Things

1) Smart farm and monitoring system for measuring the Environmental condition using wireless sensor network – IOT Technology in farming

Authors: Tharindu Madushan Bandara, Wanninayaka Mudiyansele,
Mansoor RAZA

Published year: IEEE 2020

Description:

This study uses IoT technology to develop a smart farm. As a result, farming activities like managing crops and other resources become more affordable. They employed a wireless sensor network, allowing all sensor nodes to communicate with one another over long distances. The use of wireless sensor networks aids in data collection and decision-making through analysis of the data. It makes use of a variety of sensors, including moisture, temperature, and water volume sensors. The suggested system offers farmers a more reliable and adaptable smart concept, and it has a straightforward architecture that includes IoT sensors to gather data from the field and transfer it via wireless sensor network to a central server for decision-making and task allocation to appropriate devices.

2) Smart Irrigation System for Precision Agriculture – The AREThOU5A IOT Platform

Authors: Achilles D. Boursianis, Maria S. Papadopoulou, Antonis Gotsis,
Shaohua Wan, Panagiotis Sarigiannidis, Spyridon Nikolaidis,
Sotirios K. Goudos

Published year: IEEE 2021

Description:

This paper provides a comprehensive explanation of the design and subsystems of an intelligent irrigation system (AREThOU5A IoT Platform). Modern precision agriculture is suggested as an alternative to conventional farming methods like irrigation with the use of cutting-edge technologies like IoT. In the described IoT platform, radiofrequency energy harvesting is used to power the IoT nodes, and an rectenna module has been fabricated and validated for this purpose. They presented experimental findings using fabricated rectenna with a satisfactory results.

3) Security and Privacy in Smart Farming: Challenges and Opportunities

Authors: Maanak Gupta, Mahmoud Abdelsalam, Sajad Khorsandroo, Sudip Mittal

Published year: IEEE 2021

Description:

IoT and smart computing technologies are employed in many different applications, from monitoring the state of crops and soil moisture to using drones to help with

activities like pesticide application. However, the usage of IoT and smart communication technologies exposes smart farming ecosystems to a wide range of cybersecurity risks and vulnerabilities. Such cyberattacks have the potential to destabilise the economies of nations with significant agricultural dependence. In this paper, they provided a comprehensive analysis of security and privacy in the ecosystem of smart farming. The study examines the security and privacy concerns in this dynamic and distributed cyber physical environment, as well as a multi-layered architecture that is pertinent to the precision agricultural area.

4) IoT Enabled Smart Farming and Irrigation System:

Authors: M. Rohith, R Sainivedhana, N. Sabiyath Fatima

Published year: IEEE 2021

Description:

In order to automate the process of watering plants, the authors presented an IoT enabled smart irrigation and farming system. This technology makes it easier to measure the values of different parameters, including humidity, moisture, and temperature, and then water plants appropriately. Three sensors make up this system, which measures the humidity, moisture, and temperature of plants. The motor automatically turns on the water for plants if any of the sensor values fail. The paper's main contribution is that by using IoT-enabled devices to automate the watering process and reduce the amount of manual labour required, healthy plants may be cultivated.

5) IoT Based Smart Plant Irrigation System with Enhanced learning

Authors: Kemal Cagri Serdaroglu, Cem Onel, Sebnem Baydere

Published year: IEEE 2020

Description:

An autonomous and flexible smart irrigation Internet of Things system is presented in this study. Decisions are typically based on static models that are built from plant properties. The most critical feature is that irrigation decisions can be adjusted based on varying environmental factors. The suggested solution includes Gradient Boosting Regression Trees (GBRT) as the final step after the irrigation model has been validated using four different supervised machine learning algorithms. To evaluate the total system performance, they have put up an environment with the sensor edge, mobile client, and decision service in the cloud. The preliminary findings from our prototype system, which was tested with Sardinia and Peace-lily indoor plants. The findings show that the suggested approach can successfully pick up on the various plants' irrigation preferences.

6) IoT Based Intelligent Agriculture Field Monitoring System

Authors: Md Ashifuddin Mondal, Zeenat Rehena

Published year: IEEE 2018

Description:

The goal of this research project is to suggest a smart farming technique based on the Internet of Things (IoT) to handle the challenging circumstances in agriculture. The use of smart farming is attainable because it provides automated farming practises, high precision crop control, and information gathering. This paper describes an intelligent soil temperature and humidity monitoring system for agricultural fields. Without human interaction, the system acts in accordance with these values after analysing the sensed input. In this location, the soil's temperature and moisture are recorded, and the sensed values are recorded in the ThingSpeak cloud for further data processing.

7) A Revisit of Internet of Things Technologies for Monitoring and Control Strategies in Smart Agriculture

Authors: Amjad Rehman, Tanzila Saba, Muhammad Kashif, Suliman Mohamed Fati, Saeed Ali Bahaj, Huma Chaudhry

Published: MDPI 2021

Description:

By automating human intervention, IoT can increase the effectiveness of agriculture and farming processes. Nearly every aspect of life has transformed as a result of the rapid development of Internet of Things (IoT)-based tools, including business, agriculture, surveillance, etc. In the face of diverse challenges, these radical breakthroughs are upending conventional farming techniques and offering new possibilities. This study aims to thoroughly assess smart agriculture utilising IoT methods. In smart agriculture, the study presents IoT applications, advantages, existing challenges, and future solutions. The goal of this intelligent agricultural system is to identify existing methods that can be used to increase crop yield and cut down on time, such as crop, pesticide, irrigation, and water management.