

LITERATURE SURVEY

SMART FARMER – IoT ENABLE SMART FARMING APPLICATION

College Name: Government College of Engineering, Bodinayakanur

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Team Size : 4

Team Leader : PRIYADHARSHINI N

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1) IoT Enabled Smart Farming and Irrigation System:

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

Published: IEEE 2021

Description: In this paper, authors have demonstrated a IoT enabled smart farming and irrigation system to automate the process of watering to plants. This system helps to measure the values of various parameters such as humidity, moisture and temperature of plants and water them accordingly. This system consists of three sensors which will sense the values of humidity, moisture and temperature of plants. If any of the sensor values decreases the motor automatically turns on the water for plants. The ultimate significance of the paper is that most of the manual work is reduced and watering process is automated with the help of IoT enabled devices as a result of which healthy plants can be grown.

2) A Systematic Review of IoT Solutions for Smart Farming:

Authors: Emerson Navarro, Nuno Costa, and António Pereira

Published: MDPI 2020

Description: In this work, authors have presented a systematic review of the state-of-the-art of IoT adoption in smart agriculture and identified the main components and applicability of IoT solutions. In this particular work it was observed that the use of artificial intelligence and image processing techniques has become more common to improve the management of smart farming. From the identified applications of IoT for smart farming it was observed that the most common application is the monitoring of crops. Here, authors showed that different network protocols may be simultaneously used in IoT solutions for smart farming.

3) A Multi-collective, IoT-enabled, Adaptive Smart Farming Architecture:

Authors: G. Kakamoukas, P. Sariciannidis, G. Livanos, M. Zervakis, D. Ramnalis, V. Polychrinos, T. Karamitsou, A. Folinas, N. Tsitsiokas

Published: IEEE 2019

Description: In this paper, authors have proposed a precision architecture for Smart Farming in order to use precise and efficient approaches for monitoring and processing information from farms, crops, forestry, and livestock aiming at more productive and sustainable rural development. This proposed architecture encloses wireless sensor networks, meteorological stations and unmanned aerial vehicles along with an information processing system that leverages machine learning and computing technologies. The innovation of the proposed architecture lies in the creation of an integrated monitoring and decision support system for efficient allocation of resources and protection of plant capital from the diseases.

4) Internet of Things and LoRaWAN – Enabled Future Smart Farming

Authors: Bruno Citoni, Francesco Fioranelli, Muhammad A. Imran, Qammer H. Abbasi

Published: IEEE 2019

Description: In this paper authors have explained about LoRaWAN which is been under the spotlight in recent years due to its suitability to be the standard communication protocol for IoT deployments. It provides long communication range and low energy consumption by drastically reducing the available data rate. They also explained about the development of LoRaWAN enabled smart agriculture test to improve the understanding about the impact of the limitations using experimental test data, and moving towards building predictive models and adaptive network management algorithms for smart farming using the data collected.

5) A Survey on the Role of IoT in Agriculture for the Implementation of Smart Farming

Authors: Muhammad Shoaib Farooq, Shamyla Riaz, Adnan Abid, Kamran Abid, Muhammad Azhar Naeem

Published: IEEE 2019

Description: In this paper, authors have explained the aspects of technologies involved in the domain of IoT in agriculture. They explained about the major components and technologies, network architecture, network layers, network topologies and protocols involved in developing IoT based smart farming system. They also explained about the

connection of IoT based agriculture systems with relevant technologies including cloud computing, big data storage and analytics and they highlighted the security issues.

6) 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: IoT, in particular, can improve the efficiency of agriculture and farming processes by eliminating human intervention through automation. The fast rise of Internet of Things (IoT)-based tools has changed nearly all life sectors, including business, agriculture, surveillance, etc. These radical developments are upending traditional agricultural practices and presenting new options in the face of various obstacles. The goal of this research is to evaluate smart agriculture using IoT approaches in depth. The paper demonstrates IoT applications, benefits, current obstacles, and potential solutions in smart agriculture. This smart agricultural system aims to find existing techniques that may be used to boost crop yield and save time, such as water, pesticides, irrigation, crop, and fertilizer management.

7) Traffic-Aware Secured Cooperative Framework for IoT-Based Smart Monitoring in Precision Agriculture

Authors: Ibrahim Abunadi, Amjad Rehman, Khalid Haseeb, Lorena Parra, Jamie Lloret

Published: MDPI 2022

Description: This study proposes a framework for a system that combines fog computing with smart farming and effectively controls network traffic. Firstly, the proposed framework efficiently monitors redundant information and avoids the inefficient use of communication bandwidth. It also controls the number of retransmissions in the case of malicious actions and efficiently utilizes the network's resources. Second, a trustworthy chain is built between agricultural sensors by utilizing the fog nodes to address security issues and increase reliability by preventing malicious communication. Through extensive simulation-based experiments, the proposed framework revealed an improved performance for energy efficiency, security, and network connectivity in comparison to other related works.