PAPER 1:

Title : Sensor Based Smart Agriculture with IoT Technologies

Author : M. Pyingkodi, K.Thenmozhi, K.Nanthini, M. Karthikeyan,
Suresh Palarimath, V. Erajavign

Publication Year : 2022

Description:

The IoT is a new technology trend used in almost every area thing, when connected to the internet and to each other, when you connect to the internet or interconnect, your entire system will be smarter. We have used IoT in all areas of our lives, including smart cities, smart homes, and smart retail. Much more. From 9.6 billion by 2050, agriculture needs to deliver even faster to meet this type of demand. This is possible with the latest technology, especially the IoT. The IoT enables labour free farms. The most significant tool for the IoT is the sensor. The important objective of sensors are used to determine the soil's physical qualities and the environment. The main applications of sensors are control and supervise, safety, alarm, diagnostics, and analytics. Sensors make innovative agriculture more effective and trouble-free. In agriculture, the sensor is mainly used for measuring, measuring NPK (Nitrogen, Phosphorus, Potassium) levels, and detecting disease and soil moisture content. The main solution to this problem is smart farming, which modernizes traditional farming practices. This paper narrates the role of IoT application in smart agriculture. Smart farming is also known as precision farming hence it uses accurate information to draw outcomes. It demonstrates the different sensors, applications, challenges, strengths and weaknesses that support the IoT and agriculture.

PAPER 2:

Title : Smart Farm Monitoring Using LoRa Enabled IoT

Author : Ravi Kishore Kodali, Subbachari Yerroju, Shubhi Sahu

Publication Year : 2019

Description :

Agricultural practices need to be transformed in order to overcome future food scarcity due to overpopulation across the globe. By employing emerging, disruptive technologies like IoT in the agricultural sector, it is possible to monitor farm fields using low-cost and low-power consuming devices, to automate irrigation systems for efficient usage of water resources. Weather forecast using IoT can help to plan farm filed activities like sowing, harrowing, harvesting, etc. This reduces negative impacts like yield losses due to uncertain weather changes. LPWAN technologies serve IoT applications in a better possible way so that these applications can overcome bandwidth, power and coverage constraints which are main drawbacks in other wireless communication technologies. In agricultural fields, LoRaWAN protocol or LoRa in LPWAN space gives additional advantages like scalability, security and robustness in designing IoT applications. In this paper, a smart farm monitoring model is proposed. This model utilizes LoRa communication mechanism to send sensor data like temperature ($°C$), humidity (%) and soil moisture (%) from the transmitter node to receiver node. The receiving node which is Wi-Fi enabled uses MQTT services to monitor the data in IBM Watson IoT platform and to store the same data in IBM cloud DB service.

PAPER 3:

Title : Towards Smart Agriculture Monitoring Using Fuzzy Systems

Author : Noramalina Abdullah, Noor Aerina Binti Durani, King Soon Siong,
Mohamad Farid Bin Shari, Vicky Kong Wei Hau, Wong Ngei Siong
Ir Khairul Azman Ahmad

Publication Year : 2020

Description :

Conventional farming is labor-consuming and the need to continuously monitor crops can be a burden for farmers. By realizing the concept of smart farming based on Internet of Things (IoT) technology, farmers can use a mobile application to observe and monitor air humidity, air temperature, and soil moisture-factors that can affect plant growth. Furthermore, the use of timers to control the pumps in conventional watering systems is not always practical in real-life cases. This paper proposes a framework that enables advanced fuzzy logic to control a pump's switching time according to user-defined variables, whereby sensors are the main aspect of and contributor to the system. Our proposed idea offers great potential for excellent performance as an interface between the sensors as the input and the IoT as the output medium. A comparison is made between the proposed system and manual handling. The results prove that the water consumption and watering time has been reduced significantly.

PAPER 4:

Title : A Systematic Review of IoT Solutions for Smart Farming

Author : Emerson Navarro,Nuno Cost,António Pereira

Publication Year : 2020

Description :

The world population growth is increasing the demand for food production. Furthermore, the reduction of the workforce in rural areas and the increase in production costs are challenges for food production nowadays. Smart farming is a farm management concept that may use Internet of Things (IoT) to overcome the current challenges of food production. This work uses the preferred reporting items for systematic reviews (PRISMA) methodology to systematically review the existing literature on smart farming with IoT. The review aims to identify the main devices, platforms, network protocols, processing data technologies and the applicability of smart farming with IoT to agriculture. The review shows an evolution in the way data is processed in recent years. Traditional approaches mostly used data in a reactive manner. In more recent approaches, however, new technological developments allowed the use of data to prevent crop problems and to improve the accuracy of crop diagnosis.