VSB ENGINEERING COLLEGE

ELECTRONICS AND COMMUNICATION ENGINEERING

IBM NALAIYA THIRAN

TITLE : SMARTFARMER – IOT ENABLED SMART FARMING APPLICATION

DOMAIN NAME : INTERNET OF THINGS

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ABSTRACT:

Internet of Things (IoT) technology has brought revolution to each and every field of common man's life by making everything smart and intelligent. IoT refers to a network of things which make a self-configuring network. The development of Intelligent Smart Farming IoT based devices is day by day turning

the face of agriculture production by not only enhancing it but also making it cost-effective and reducing wastage. The aim / objective of this report is to propose IoT based Smart Farming System assisting farmers in getting Live Data (Temperature, Soil Moisture) for efficient environment monitoring which will enable them to increase their overall yield and quality of products. The IoT based Smart Farming System being proposed via this report is integrated with Arduino Technology mixed with different Sensors and a Wi fi module producing live data feed that can be obtained online from Thingsspeak.com. The product being proposed is tested on Live Agriculture Fields giving high accuracy over 98% in data feeds.

INTRODUCTION:

Agriculture farming is the primary occupation of the most of the people and is the main back-bone of Indian economic system. Agriculture farming provides employment opportunities to most of the people on a large scale in underdeveloped and developing countries in addition to providing food. It is the process of producing different food, fiber and many other desired products by the cultivation and rising of domestic animals. Agriculture is the primary source of livelihood for about more than 58% of India's population. Agriculture in many parts of worlds is performed with traditional ways. The reality is that many farmers still have no proper

knowledge of making the process more erratic. A bigger portion of agriculture and farming activities depends on the predictions, which most the time fails. Due to this, farmers have to go through heavy losses and most of the time they end up making bad mistakes with their life. However, a lot of people know the advantages of legitimate soil moisture and its quality, irrigation, and air quality for growth of various crops, and these are the parameters that are just unavoidable.

This type of crop failures can be avoided and some of the preventions are to be noticed with the available resources before dumping. There is only way to address these types of problems and increase the quality and quantity of crop production is by utilizing the IoT sensing technology. Farming with IOT helps in mitigating the shortage of food by demanding the existing land for stronger utilization at minimum cost.

Internet of things IOT consists of two words Internet and Things. The term things in IOT refers to various IOT devices having unique identities and have capabilities to perform remote sensing, actuating and live monitoring of certain sort of data. IOT devices are also enable to have live exchange of data with other connected devices and application either directly or indirectly , or collected data from other devices and process the data and send the data to various servers. The other term internet is define as Global communication Network connecting Trillions of computers across the planets enabling sharing of information .Thus the IOT can be define as :"A dynamic Global Network Infrusture with self configuring capabilities based on standard and inter operable communication to protocol where physical and virtual things have identities, physical attributes ,and virtual personalities and use intelligent interfaces and are seamlessly integrated into the information network ,often communicate data associated with user and their environment."

LITERATURE SURVEY:

- The author (1) says, Internet of Things (IoT) is present and future of every field impacting everyone's life by making everything intelligent. It is a network of different devices which make a self configuring network. The new developments of Smart Farming with use of IoT, by day turning the face of conventional agriculture methods by not only making it optimal but also making it cost efficient for farmers and reducing crop wastage. The aim is to propose a technology which can generate messages on different platforms to notify farmers. The product will assist farmers by getting live data (Temperature, humidity, soil moisture, UV index, IR) from the farmland to take necessary steps to enable them to do smart farming by also increasing their crop yields and saving resources (water, fertilizers). The product proposed in this paper uses ESP32s Node MCU, breadboard, DHT11 Temperature and Humidity Sensor, Soil Moisture Sensor, SI1145 Digital UV Index / IR / Visible Light Sensor, Jumper wires, LEDs and live data feed can be monitored on serial monitor and Blynk mobile. This will allow farmer to manage their crop with new age in farming.
- The author (2) says, Use of IoT plays an important role in smart agriculture. The basic technologies of IoT like laser scanner, RFID, photoacoustic electromagnetic sensors, etc. these technologies can be used to make great innovations in agricultural. In agricultural information trans-mission, precise irrigation, intelligent cultivation control, agricultural product safety, and many more. This paper also focuses some applications of IoT in forestry. IoT can play an important role in forest identification and wood tracking and its management. Finally, this paper concludes that the integration of IoT and cloud computing has become a tendency.

- The author (3) says, Agriculture is essential to India's economy and people's survival. The purpose of this project is to create an embedded-based soil monitoring and irrigation system that will reduce manual field monitoring and provide information via a mobile app. The method is intended to help farmers increase their agricultural output. A pH sensor, a temperature sensor, and a humidity sensor are among the tools used to examine the soil. Based on the findings, farmers may plant the best crop for the land. The sensor data is sent to the field manager through Wi-Fi, and the crop advice is created with the help of the mobile app. When the soil temperature is high, an automatic watering system is used. The crop image is gathered and forwarded to the field manager for pesticide advice.

- The author (4) says, Agriculture has always been a roadblock to the country's development. Smart agriculture, which comprises modernising present agricultural systems, is the only answer to this challenge. As a result, the suggested strategy attempts to use automation and Internet of Things technologies to make agriculture smarter. Crop growth monitoring and selection, irrigation decision assistance, and other uses are possible thanks to the Internet of Things (IoT). To modernise and boost crop yield, a Raspberry Pi-based autonomous irrigation IOT system has been proposed. This project's main purpose is to produce crops using the least amount of water possible. Most farmers waste a lot of time in the fields in order to focus on water available to plants at the appropriate time. Water management should be improved, and the system circuit's complexity should be minimised. Based on the data collected from the sensors, the suggested system determines the amount of water required. Two sensors detect the humidity and temperature of the soil, as well as the humidity, temperature, and length of sunshine each

Rerecommended systems must calculate the irrigation water quantity. The key benefit of the system is the integration of Precision Agriculture (PA) and cloud computing, which will reduce water fertiliser consumption while increasing crop yields and assisting in the evaluation of field weather conditions.

FUTURE SCOPE:

Future work would be focused more on increasing sensors on this stick to fetch more data especially with regard to Pest Control and by also integrating GPS module in this IoT Stick to enhance this Agriculture IoT Technology to full-fledged Agriculture Precision ready product.

- Implementation of Foggers
- Implementation of sliders.
- Implementation of roof sheets.
- Implementation of controllable water motor.
- Detection of gases/minerals above/under the ground & detection of insects.

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