SMART MONITORING DEVICES FOR AGRICULTURE

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ABSTRACT

India being developing country, agriculture is still the primary occupation of majority of people. Currently the supply and demand of agricultural products has not been controlled properly because of manually measuring the environmental parameters by the farmers. Hence, adaption of technology based farming is necessary to increase the revenue. Even the climatic changes and rainfall has been erratic over the past few decades. Lack of rainfall and excessive rainfall both are dangerous to the cultivation. The correlation analysis between the crop statistical information and agricultural environment information enhances the ability of the farmers to analyze the current condition and predict the future harvest. In this paper, the sensor technology and wireless network in integration with IoT has been studied and reviewed based on the actual agricultural system. Here a distributed wireless network of sensors is used to collect the real time data of the various environmental parameters. The microcontroller handles this data and triggers the actuators based on the threshold defined for a particular crop to control the water quantity. The data from the irrigation field is view via thing speak cloud.

INTRODUCTION

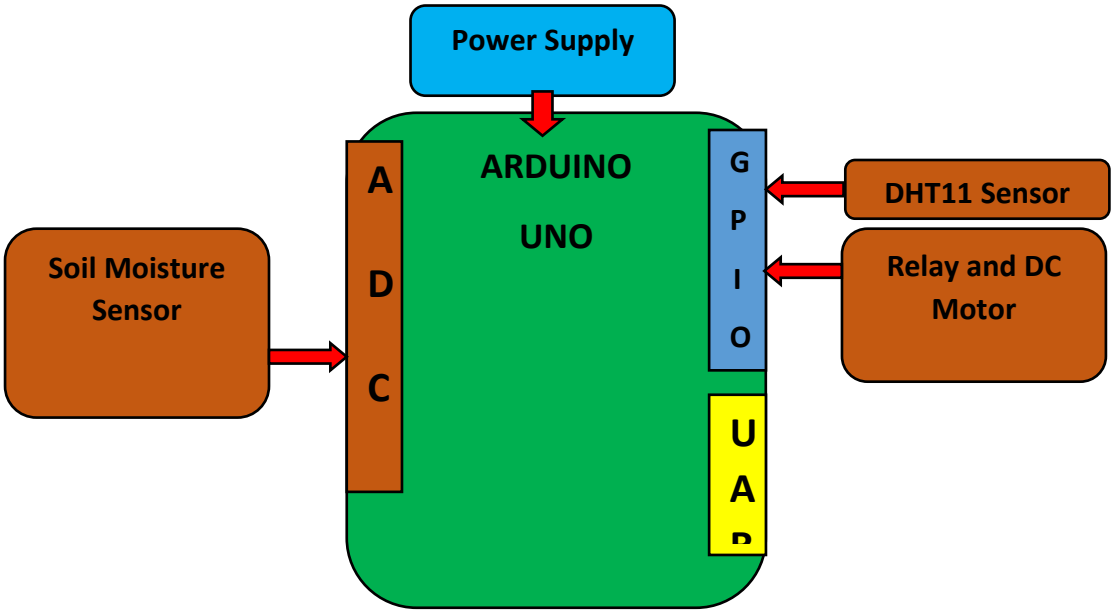
Agriculture is the basic source of livelihood of people in India. In past decade, it is observed that there is no much crop development. Some of the factors which are responsible for this may be wastage of water, low soil fertility, fertilizer abuse, climate change, diseases, etc. Agriculture uses 85% of available fresh water resources worldwide. As the demand on water consumption is increasing, there is an urgent need to create strategies for sustainable use of water. As the world is trending into modern technologies it is necessary to trend up in agriculture also. Latest technologies such as Internet of Things and Cloud in combination with Wireless Sensor Networks can lead to agricultural modernization. IoT can benefit from virtually unlimited capabilities and resources of cloud. Cloud can offer an effective solution for IoT service management. IoT is an ecosystem of connected physical devices that are accessible through the Internet. It consists of objects, sensor devices, communication

infrastructure, computational and processing units. The objects have certain unique features and are uniquely identifiable and accessible to the Internet. These physical objects are equipped with Radio Frequency Identification (RFID) tags. The sensors communicate the information over the Internet to the cloud server which is a computational and processing unit. Theresult of processing is then passed to the decision- making and action invoking system that determines an automated action to be invoked. The mobile application developed in android helps to monitor the field from anywhere through the use of internet.

PROPOSED SYSTEM

The proposed framework manages the way toward monitoring and updating information management of irrigation area with the idea of IOT and. The working model of IoT based smart monitoring devices for agriculture contains the accompanying units and sensors and the major objectives are

- To reduce human effort and time efficiency.
- Lora based Monitoring and Controlling System



SOIL MOISTURE SENSOR

The moisture of the soil plays an essential role in the irrigation field as well as in gardens for plants. As nutrients in the soil provide the food to the plants for their growth. Supplying water to the plants is also essential to change the temperature of the plants. The temperature of the plant can be changed with water using the method like transpiration. And plant root systems are also developed better when rising within moist soil. Extreme

soil moisture levels can guide to anaerobic situations that can encourage the plant's growth as well as soil pathogens. This article discusses an overview of the soil moisture sensor, working and it's applications.

The soil moisture sensor is one kind of sensor used to gauge the volumetric content of water within the soil. As the straight gravimetric dimension of soil moisture needs eliminating, drying, as well as sample weighting. These sensors measure the volumetric water content not directly with the help of some other rules of soil like dielectric constant, electrical resistance, otherwise interaction with neutrons, and replacement of the moisture content.

This sensor mainly utilizes capacitance to gauge the water content of the soil (dielectric permittivity). The working of this sensor can be done by inserting this sensor into the earth and the status of the water content in the soil can be reported in the form of a percent.

This sensor makes it perfect to execute experiments within science courses like environmental science, agricultural science, biology, soil science, botany, and horticulture.

CONCLUSION

The entire system gives the field automation in agriculture, which makes farmer's work easier. It helps in increasing the agricultural production and reduces the time and money of the farmer. Rooftop is useful for smaller farms as it is costly to implement. Graphs are used to analyze present conditions and take necessary actions in future. Android application can be further developed for easier access to all elements in the field and can be used to control the field. Temperature and Humidity and moisture values can be used to make statistical analysis regarding the weather conditions in the past and predict the future.

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