

Smart E-Agriculture Monitoring Using Internet Of Things

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ABSTRACT

Technological importance have been a great support for making decisions in various fields especially in agriculture. The development of agriculture has been on under development for the past few years due to lack of Agriculture knowledge and environmental changes. Here, it mainly focusing on the improvement of rural and agricultural development through advanced information and communication processes. It extend the agriculture organization's ability to meet the needs of its farmers. By using IoT, it enhance the easy access monitoring system to reduce the human stress in agriculture. The results obtained, through GSM and GPRS daily alert SMS can send to the farmer in the event of emergency, he can able to view the statistical survey report by irrespective of location and motor has been ON automatically if the water level is decreased. This study provides the desired information at any instant of time from any part of world and viewing their problem immediately at any part of the location.

IndexnTerms: InternetofThings,GSM,GPRS,pHSensor,Humidity Sensor.

I. INTRODUCTION

Internet of things is a technology which tends to connect all the object in the world to the internet.Applications are developed based on IoT enabled devices for monitoring and control in various domains including industrial processes,home appliances.In agriculture domain few researches have proposed architecture based on IoT to monitor supply chain management of agricultural product.Hereby,it provide a wireless sensor monitoring system using GSM and GPRS technology, which could potentially be an integral part of E-agriculture Productivity. The main objective of this thesis is to reach farmers for their awareness,usage and perception in E-Agriculture.The agriculture sector in India is currently facing a difficult phase. India is moving towards an agriculture emergency due to inadequate investment in irrigational and agriculture infrastructure, lack of attention, ineffective land management, non-given of fair prices to farmers for their crops and insufficient land reform in India. This thesis is very helpful for formers for their agriculture informatics and agriculture services. The Smart e-agriculture has the dependency among the various components. It has the dependency between:

- pH Sensor
- Humidity Sensor
- Moisture Sensor
- Water level Sensor
- Arduino Uno microcontroller Output
- Relay
- Electric Motor
- GPRS Technology

In this system we use various sensors for measuring the status of the soil. The pH sensor, humidity sensor, water level sensor and moisture sensor are the sensors which measures the status of the soil. The pH sensor measures the acidic or basic nature of the soil. The moisture sensor is used to measure the volumetric water content in the soil. The humidity sensor measures the amount of water vapour in the air. The water level sensor measures the water level. The analog signals are send to the microcontroller and process.

II. METHODOLOGY

Logic For Measuring The Status Of The Soil

To measure the status of the soil , pH sensor, humidity sensor, water level sensor and moisture sensor has been used.The pH sensor measures the acidic or basic nature of the soil.The moisture sensor is used to measure the volumetric water content in the soil. The humidity sensor measures the amount of water vapour in the air. The water level sensor measures the water level of the Sand.There by satisfying the needs of the soil.Then, the pH value,Humidity and moisture value of the soil can be viewed through LDR.

Logic For Automatic Motor Detection

The entire system consists of sensors which monitors the state of the soil. The signals are send to the microcontroller. If there is any lack of water level in the soil, the microcontroller pump the water to the desired level by using motor. The desired level is measured by using sensors. The information about the state of the soil is send to the database.

Sms Based Information

Bio-medical sensors are attached on the cultivated crops at appropriate positions to collect real time data about their land. These data are then compared to standard threshold values to check if the crop is in normal condition. If the value has been over increased or decreased means alert SMS can send to the particular person in case of emergency by GSM.

Stastical Survey Information

In statistical survey report ,GPRS technology is used. Farmers can get the desired information through graph model at any instant of time from any part of world and they can also get the help from experts viewing their problem immediatly by without moving anywhere

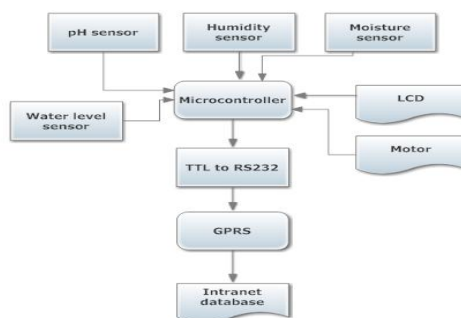


Fig 1.Block Diagram Of Smart E-Agriculture

III. FUNCTION FLOW

It generate the modern agriculture which is highly knowledge intensive which also requires timely, reliable and accurate information on natural resource endowments. It consists of two detection systems one monitoring and another warning system. Bio-medical sensors are attached on the cultivated crops at appropriate positions to collect real time data about their land. These data are then compared to standard threshold values to check if the crop is in normal condition. Accordingly, the information about the land is updated in the Microcontroller. If there is any lack in the desired level, the microcontroller activates the motor circuit, which pumps the water to the soil. Then, automatic motor has been ON if the the water level is decreased. There by satisfying the needs of the soil. Then, the status of the soil can be viewed by LCD panel. In warning system ,GSM and GPRS technology has been used. In case of emergency alert SMS can be passed by GSM and current information are viewed through internet database by using GPRS. In case of emergency automatic motor has been ON if the the water level is decreased.

IV. RESULT

The figure describes the transmitter and receiver process to enhance the information and communication technology. Thereby checking the value of various level of sensor can be monitored.

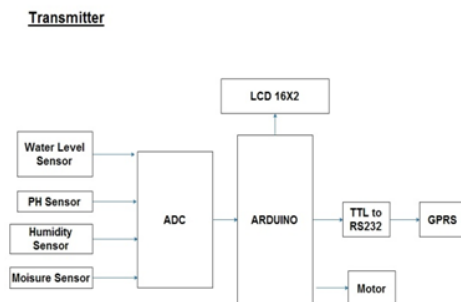


Fig 2.Block Diagram For Transmitter

In the above figure all the signals of various sensor can be converted into analog to digital converter and stored in Arduino microcontroller.

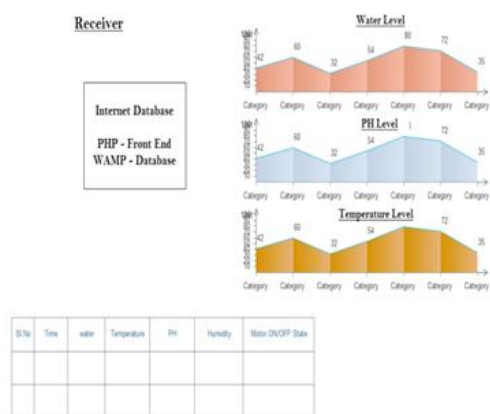


Fig 3.Block Diagram For Receiver

The figure shows the statistical survey report by graph model. Through that the human can able to view the land report continuously by irrespective of location.

Logic For The Relay Operations In Automatic Motor Pump:

Water level sensor	Relay	Electric Motor
High	off	off
Low	on	on

Case1:

The above logic explains if the water level is increased means the motor works on off state and relay doesn't work.

Case2:

If the water level is over decreased means the motor can be on automatically with the help of relay operations.

V. CONCLUSION

By using Internet of Things, majority of Farmers were aware about the monitoring and warning detection method in agriculture. This will facilitate the e-agriculture to assessing the performance of the farmers doing independently. It enables to provide the alert messages and statistical survey report to the farmers by irrespective of location. This study is to provide great potential for improving decision making in agriculture. From this report it extend the agriculture organization's ability to meet the needs of its farmers.

VI. FUTURE WORK

In Future work,an exhaustive research about the e-agriculture should be done.It aimed to analyse the new technology for reliable transmission which improves the efficiency of the E-agriculture product. It include some new algorithm for enhacing the agriculture product and environment services.

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