

IoT-Based Smart Farming by Monitoring the Crop Field Using Sensors

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Abstract

In smart agriculture, irrigation purpose internet of things is used for the farmland the water log is used. Using soil moisture sensor, we can monitor the farmland of soil moisture. Cloud service brokerage commands the relay when moisture level reaches particular point to suction motor for ON switch. From farmland the suction motor takes out excess of water. The water managing system handled own or by using the mobile application. Using DHT sensor we can analyze whether of specific location. IoT is connect all devices to internet allow to communicate that connected device. In agriculture IoT used as modern information and communication technologies. For building a crop monitoring system sensor are built. Using mobile application, we can monitor on that. In the motor switch monitor and control are used.

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I. INTRODUCTION

IoT connect to all devices to internet for the communication. In our India, Agriculture provides a large amount of food and hence it says a biggest livelihood provider. In daily life population increases we have to need for agriculture merchandise. To guide more population in farm requirement of amount of fresh water utilized.

The quality of fresh water is important for the large production of farms. In India 83% of people are depend on agriculture hence we have to use water so carefully using IoT is a big network that are made by connecting the devices and that gives the information about how they used to us and where in environment they are operate.

IoT works in unikedomain names of farming to enhance time performance, water control, crop tracking, soil management, manipulate of pesticides, insect repellent and fertilizers. There is

computerizing system and no need of human intervention. For analysis readings of sensor are transmitted using internet of things.

While doing the agriculture we use new Information and Communication Technology. The IoT is clever farming in which system is tracing the sensors like light, humidity, temperature, moisture of soil and gadget of irrigation because of situation of intense climate.

We are seen that In India plants are immersed in water automatically when rainfall and flood. For high yield soil level makes inside soil. Every crop or plant has different capacity or storing the water. Some other factors that have an effect on the crop yield are humidity and temperature, so it is necessary to maintain their range.

That issue can resolve by way of enforcing our challenge. It enables the farmers to shield the vegetation from excess waterlog. It helps to farmers for storing the water and protects the vegetation.

II. Literature Survey

2.1 Pratibha S R proposed an IoT based totally tracking gadget in clever agriculture.

The IoT sensors are able to transmitting statistics. Using that we monitor that the temperature and humidity in the agriculture. The Images here are captured and that send into the farmer mobile through MMS using the Wi-Fi. The environmental monitoring is factor that improve yield of green vegetation.

2.2 Nikesh Gondchawar. In this paper he studies on the piece of agriculture on basis of IoT. Also, it included that in farmland the automation of irrigation. The works like spraying, weeding, are control with by aid of a Smart GPS which is based on remote-controlled robot.

That consist of clever manipulate and clever selection making for sensing the moisture, bird and animal scanning, keep alert, and so forth the robot are used, we are focus on clever irrigation and smart manage.

2.3 Nelson Sales. It is a proposal for introduce Computing the Cloud and adoption of Precision agriculture. The records have been dispatched to the cell, MMS or SMS, usage of to assess the plant needs Cloud for controlling and tracking the sector. Wireless Sensor and Actuator Network technology has been created. Because of these the financial and environmental benefits are reduces. In agriculture the intension is that on cloud area

2.4 Nageswara Rao R Using Smart Crop-Field monitoring and automation irrigation based to improve the productiveness machine which helps that is proposed on this paper using IoT. Temperature of soil, humidity, the duration of sunshine that statistic today is send to sensors. Using we can find the amount of water that is Based on these the proposed. With the of cloud in Agriculture that improve the yield that can reduce consumption of water.

III. Proposed methods

The proposed device in which we study the range of micro-nutrients that is found in the farmland and maintaining. Behind the aim of that manage the excess water log within the farmland means from the duration of rainfall and flood. And that measure a rare variety of micronutrients that are present within the farmland and that improve fertility with aid of measured pH level in the soil. In the proposed method has 4 sensors.

- Soil Moisture
- pH sensor
- Water stage sensor
- DHT-11 sensor

Using the soil moisture degree, we can measure soil moisture sensor and using pH sensor we can measure the pH of soil in agriculture. Using water stage sensor the water degree within the farmland is measured. The values of humidity and temperature measured using DHT-11 sensor. The factors of machine take for consideration are:

1. Soil Moisture
2. Temperature
3. Humidity
4. Water Level
5. pH of the Soil

The Cloud Storage Brokerage commands for dealing with the extra water based on the analysis and the pH cost which is used for propose the consumer supply soil with nutrients like Copper, Boron, Molybdenum, Cobalt, Iron, Manganese, Zinc. Chlorine the influenced by to the pH of the soil.

We can evaluate the micronutrients in the soil. A prediction algorithm is carried out climate prediction. The process complete manually. Using that software, we can find level of moisture inside the soil and the humidity. Inside the farmland moisture level in the air and the water stage and the

number of nutrients. Eliminate the extra water. And locate that the lifetime the usage of the prediction algorithm. That affects a yield of desirable vegetation.

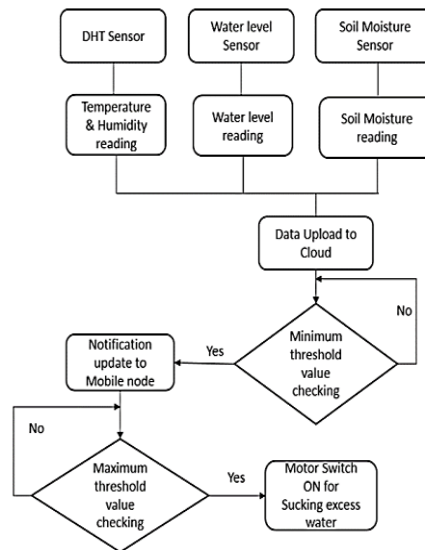


Fig:1Flow chart

Each sensor is sent to the Cloud and checking of its miles whether it is not it's far in the variety. If the study is less or shorter of the variety the corresponding responsibilities are done. The Cloud will watch for the subsequent studying to be obtained. The large task is to measure moisture of soil and pH of soil.

IV. RESULT ANALYSIS

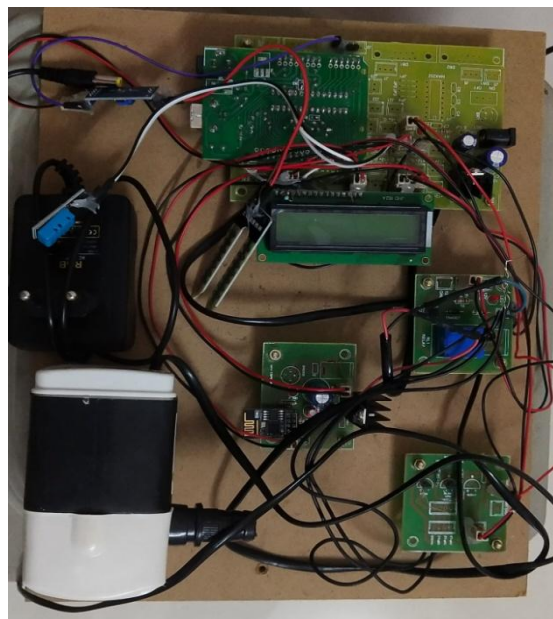


Fig.2 Complete Hardware Part

The Cloud Storage acts like brokerage between application and sensor.



Figure:3 Temperature Graph

In this, temperature variations w.r.t. time is shown.



Figure:4 Humidity Graph

In the above graph the temperature and Humidity reading that are send by sensor DHT 11.



Fig.5 Water level graph

Water level is calculated and plotted. This water level helps to get further decision for excess water to remove. Water level is displayed only if the level of water is zero.



Fig.6 PH value graph

PH value graph is plotted above which indicates that different water and condition has different PH value.



Fig.7 Moisture Level Graph

Moisture from environment is displayed in above graph with respect to time.

V.CONCLUSION

Using The Internet of Things, we can learn the term “Smart Agriculture”. Study of Agriculture can do automatically by using the usage of sensors and transmitting the information by Wireless Sensor Network and that analyzed in the cloud and appeared the operations using GPS which I based on robot. But our aim is to of the tracking of the moisture and water level within the farmland. That lets in us to control the excess water. To the determination of the quantity of micronutrients gift inside the soil the pH dimension is used. This determination cannot prove the yield of great plants. The gadget are offers us the ability to control large water and the supply to it in micro-vitamins in the soil.

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