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Smart Agriculture using IoT

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Abstract - *Internet of Things is a progressive innovation that speaks to the fate of correspondence and figuring. Nowadays IoT is utilized in each field like keen homes, shrewd traffic control savvy urban areas and so on. The zone of usage of IoT is huge and can be executed in each field. The zone of execution of IoT is tremendous and can be actualized in each field. This paper is about the usage of IoT in Agriculture. The IoT sensors used in proposed model are temperature sensor[DH22], soil pH sensor, humidity sensor. The proposed model is a straightforward engineering of IoT sensors that gather data and send it over the Wi-Fi system to the server, there server can take activities relying upon the data.*

***Key Words*: Internet of Things, temperature sensor, pH sensor.**

1. INTRODUCTION

Smart cultivating is the execution of different advances and gadgets like web, cloud and the IoT gadgets. As in this day and age the populace is expanding and it should be around 9.7 billion by 2050 and to take care of those billion people groups we have to improve the creation of harvests. The populace is expanding and then again the agrarian land is diminishing because of different reasons like industrialization, business markets and private structures are being made on those horticultural terrains and to take care of these billions we have to increment out creation and this should be possible by actualizing IoT in cultivating.

In The current situation the product of cultivating isn't appreciated by the farmers because of different reasons like bugs assaults, plant illness, not having legitimate information on basic enhancements for the yields and there are additionally different snags. So as to dispose of these obstacles and make cultivating increasingly productive and smart and amicable for farmers they need innovative progression.

Traditional Farming and Precision Farming are altogether different from one another inside and out. Traditional Farming uses the old and conventional strategies for agriculture and utilizing those old gadgets for work and developing occasional harvest with no pre appraisal of requests in advertise, rates, climate forecasts of climate office and so on savvy faming utilizes new innovations like shrewd associated gadgets, IoT sensors , Internet , Farmers visiting network , time to time evaluation of different components like best conditions for plant to develop, how much supplements are required , soil quality , water quality check and so on. .Brilliant Farming makes cultivating simple, conservative (practical), limit work cost and improve crop yielding and give better creation.

The paper [1] aims in to automate the Maintenance, Control of Insecticides and pesticides, Water Management and Crop Monitoring. The paper[2] aims at making use of evolving technology i.e. IOT and smart agriculture using automation. Monitoring environmental conditions is the major factor to improve yield of the efficient crops. Paper[3] proposed model is a simple architecture of IoT sensors that collect information and send it over the Wi-Fi network to the server, there server can take actions depending on the information.

2. REQUIREMENTS

Arduino UNO -It is a microcontroller board based on the ATmega328P (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16MHz ceramic resonator(CSTCE16M0V53-R0), a USB connection, a power jack, an ICSP header and a reset button.

Figure 1: Arduino UNO

DHT22 – Temperature and Humidity Sensor Temperature and dampness can monstrously influence the development of plants the given sensor monitors the temperature and stickiness in the yield field a different component can be created to control the temperature in the event that the cultivating is done in the shut condition

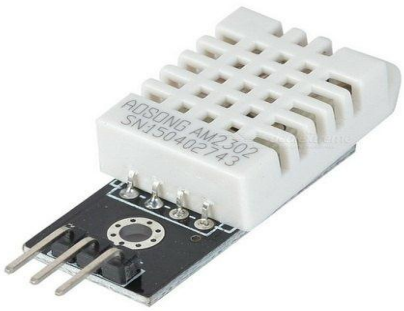

Figure 2:Temperatue and Humidity Sensor

GSM module- It is used for connecting the device to another GSM device enabling IoT connectivity and remote monitoring. This module will send data to the registered set of devices and cloud for analytics.

Figure 3: GSM Module

pH Sensor – The sensor will get readings from the soil and will track the health of the soil. pH readings can help us find the efficiency or deficiency of pesticide or fertilizers.

Figure 4: pH sensor

3. Block diagram

3. Block Diagram

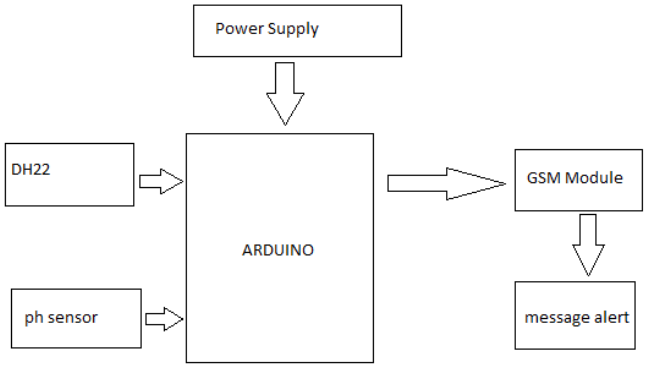

Figure 5:Block Diagram

4. Working

IOT based smart farming framework is utilized to create choices with respect to soil parameters utilizing ongoing information. The system architecture consists of a Arduino Uno microcontroller board, sensors like DH22 temperature and humidity sensor, pH sensor and a GSM module as shown in Fig. 5. A notification will be sent to the farmer at whatever point the physical parameters detected are underneath the edge esteem. The Arduino Uno board controls all the exercises occurring ready and goes about as the IoT entryway. Sensors sense all the physical parameters and convert the simple incentive to computerized esteem. Temperature and humidity sensors are utilized to quantify the temperature and moistness separately on field. pH Sensor are utilized to gauge the pH level of the soil. The IOT gateway additionally has the GSM capacity through the module associated. This collector unit likewise has a duplex correspondence connect dependent on a cell Internet interface, utilizing general bundle radio assistance (GPRS) convention, which is a parcel arranged portable information administration utilized in 2G and 4G cell worldwide framework for versatile interchanges (GSM).

Figure 6 depicts the workflow associated with the block diagram

• The system first checks the parameters of the soil. • The temperature and humidity values are less or more than the threshold value are checked. • The pH value is less or more than the threshold value are checked. • If the values are varied from the threshold value, farmer is notified by sending an alert message. • If the values are normal then the sensors will continue to acquire the required data.

The gadget runs a few work processes so as to perform different tasks that are related with the element which prompts the total robotization of the component this

lessening human intercession. Such work processes can be utilized to mechanize the necessity of the harvests.

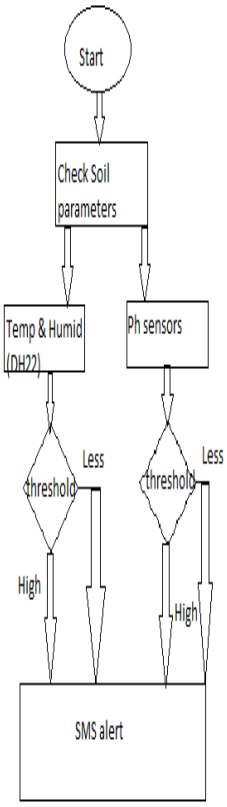

Figure 6: Flow Diagram

5. CONCLUSION

IOT based smart agriculture framework can end up being useful for farmers. Threshold values for climatic conditions like humidity, temperature, pH worth can be fixed dependent on the ecological states of that specific district. This framework creates soil parameter esteems dependent on the detected continuous information from field and information from the climate repository. By utilizing sensors the harvest field that is associated with web, a proper choice can be taken. At long last reason that we have to create and ideal IoT design for agribusiness so as to upgrade quality and amount of creation, spare assets like water and power, financially effective harvest that cost less and make more benefit as in nation like India ranchers assume a significant job in GDP so along these lines the general GDP can likewise be improved

REFERENCES

[1] Mrs.Vaishali Puranik, Mrs Sharmila,Mr Aniket Ranjan,Ms.Anamika Kumari "Automation in agriculture and IOT" 2019 4th International Conference on Internet of Things:Smart Innovation and Usages

[2] G.Sushanth and S .Sujata "IOT Based Smart Agriculture system" 2018 International Conference on wireless communications signal processing and networking

[3] Rahul Dagar,Subhranil som,Sunil Kumar Khatri "smart Farming-IOT in Agriculture" 2018 International Conference on Inventive Reserch in computing Application

[4] Sourav Verma,Rahul Gala,S madhavan, Sanchit Burkule,Swapnil Chauhan, Dr Chetan Prakash 'An Internet of Things (IOT) Architecture for Smart Agriculture ",2018 4th International Conference onComputing Communication Control and Automation