|| Volume 5 || Issue 12 || April 2021 || ISSN (Online) 2456-0774
INTERNATIONAL JOURNAL OF ADVANCE SCIENTIFIC RESEARCH & ENGINEERING TRENDS
Multidisciplinary Journal
Double-Blind Peer Reviewed Refereed Open Access International Journal

AGRICULTURAL FIELD MONITORING AND OPERATIONS CONTROL OVER INTERNET

Asma Allauddin Bhaldar[1], Sara Aslam Shaikh[2], Anil Kumar Koli[3], Rushikesh Vinayak Kadam[4] , Venkat Ghodake[5]

Student, AISSMS IOIT PUNE [1234]

Asst. Professor, AISSMS IOIT PUNE[5]

asmabhaldar72@gmail.com, sarashaikh165@gmail.com, anilkoli546@gmail.com, rushikesh1305@gmail.com, venkatghodake@aissmsioit.org

----------***----------

Abstract: In our country 70 to 75% peoples are dependent on the agriculture field. Irrigation is one of the basic need in agriculture field. But now day's improper irrigation system is most of the big problem is in front of farmers. So avoid this problem we need to accept new technologies such as smart irrigation system. That's why me and my group members are select the topic "Smart irrigation system for agriculture field monitoring for our BE level project. The Smart irrigation System **has wide scope to automate the complete irrigation system. Here we are building a** IoT based Irrigation System **using ESP8266 Node MCU Module and DHT11 Sensor. It will not only automatically irrigate the water based on the moisture level in the soil but also send the Data to Thing Speak Server to keep track of the land condition. The System will consist a water pump which will be used to sprinkle water on the land depending upon the land environmental condition such as Moisture, Temperature and Humidity. We previously build similar Automatic Plant Irrigation System which sends alerts on mobile but not on IoT cloud. Apart from this, Rain alarm and soil moisture detector circuit can also be helpful in building Smart Irrigation system. Before starting, it is important to note that the different crops require different Soil Moisture, Temperature and Humidity Condition. So in this tutorial we are using such a crop which will require soil moisture of about 50-55%. So when the soil loses its moisture to less than 50% then Motor pump will turn on automatically to sprinkle the water and it will continue to sprinkle the water until the moisture goes up to 55% and after that the pump will be turned off. The sensor data will be sent to Thing Speak Server in defined interval of time so that it can be monitored from anywhere in the world.**

---------- ***----------

I INTRODUCTION

There are data-acquisition and control devices that will be a substitute for a supervisor in a multisite job operation. With the ability to access the application remotely, corporation can eliminate the need to send a service person to the application and thus save the labour time and money. The implementation of chosen embedded networking is achieved by means of the embedded web server. A web server provides access to the end devices for the client by uploading web pages as per the client request. When the configured IP address is enter in the web browser, the predesigned HTML web pages get displayed through which the client can remotely monitored the sensor status respectively.

II LITERATURE SURVEY

In irrigation field, soil moisture sensor, temperature sensors are placed in root of plant and microcontroller handles the sensor information and transmits data. One algorithm was developed to measure threshold values of temperature sensor and soil moisture sensor that was programmed into a microcontroller to control water quantity. A model of automatic irrigation system which is based on microcontroller and solar power was used only for source of power supply. Various sensors are placed in paddy field. Sensors sense water level continuously and give the information to farmer through cellular phone. Farmer controls the motor using cellular phone without going in paddy field. If the water level reaches at danger level, automatically motor will be off without conformation of

farmer. In this paper, soil moisture sensor, temperature and humidity sensors placed in root zone of plant and transmit data to android application. This paper on "Automatic Irrigation System on Sensing Soil Moisture Content" is intended to create an automated irrigation mechanism which turns the pumping motor ON and OFF on detecting the dampness content of the earth. In this paper only soil moisture value is considered but proposed project provided extension to this existed project by adding temperature and humidity values. Remote Monitoring in Agricultural Greenhouse Using Wireless Sensor and Short Message Service (SMS).In this paper they are sending data via sms but proposed system sends the values to mobile application. This proposed paper is Arduino based remote irrigation system developed for the agricultural plantation, which is placed at the remote location and required water provides for plantation when the humidity of the soil goes below the set-point value. But in this we did not aware about the soil moisture level so to overcome this drawback proposed system included with extra feature soil moisture value and temperature value which displayed on the farmer mobile application. “Irrigation Control System Using Android and GSM for Efficient Use of Water and Power” this system made use of GSM to control the system which may cost more so to overcome that proposed system used arduino yun board which already consist of in build wifi module. “Microcontroller based Controlled Irrigation System for Plantation” In this paper old generation with lesser memory microcontroller is used to control the system but proposed system made use of arduino yun board which is user friendly and it helps to dump the programs easily. “A wireless application of drip irrigation automation supported by soil moisture sensors” in this paper irrigation is carried out using soil moisture values but extend to this proposed system displays temperature and humidity values. By referring all above papers it is found that no such systems are existed with all integrated features but proposed system includes these all features such as displaying temperature, humidity and soil moisture values and also automatic switching on and off of motor by considering soil moisture values

III PROBLEM STATEMENT

The traditional method of agriculture is need to change with help of technology. The new technology is helpful in agri domain to grow their product ration. It also monitor and give exact values of amount Water, Temperature and number things that helpful for food life and give control over it. We can monitor our farm by home also using IoT Technology

IV PROPOSED SYSTEM

The proposed system is an IoT enabled underground cable fault detection system. The basic principle behind the system is Ohms law. When fault occurs in the cable, the voltage varies which is used to calculate the fault distance. The system consists of Wi-Fi module, microcontroller, and Real-Time Clock. The block diagram of the fault detection system is shown in the Figure .The power supply is provided using step-down transformer, rectifier,and regulator. The current sensing circuit of the cable provides the magnitude of voltage drop across the resistors to the microcontroller and based on the voltage the fault distance is located.

V METHODOLOGY

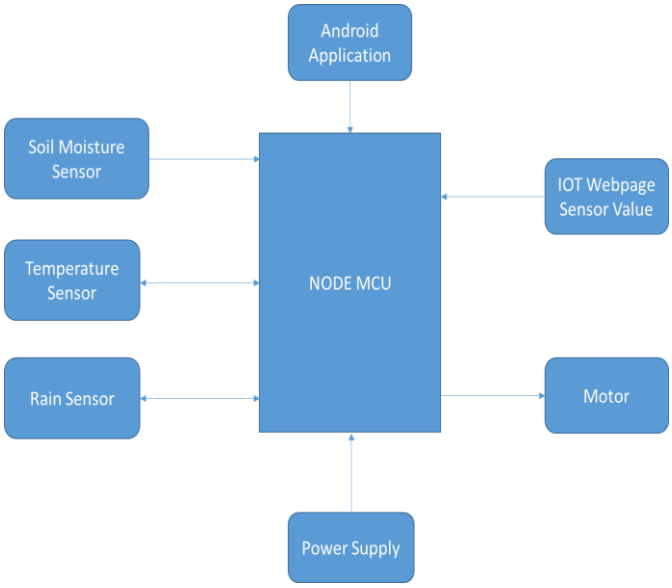

Fig.1 Block Diagram of the System and Its Explanation

Water sprinkler control was achieved by setting a threshold value at which irrigation should begin. When the sensors switched on when the moisture content is low. The threshold values depend on the type of soil used.

Readings from the two sensors were also transmitted to a THINGSPEAK channel to obtain graphs. Thing Speak is an open data platform and API for the Internet of Things that enables you to collect, store, analyse, visualize, and act on data from sensors or actuators, such as Arduino

|| Volume 5 || Issue 12 || April 2021 || ISSN (Online) 2456-0774
INTERNATIONAL JOURNAL OF ADVANCE SCIENTIFIC RESEARCH & ENGINEERING TRENDS
Multidisciplinary Journal
Double-Blind Peer Reviewed Refereed Open Access International Journal

FLOW CHART

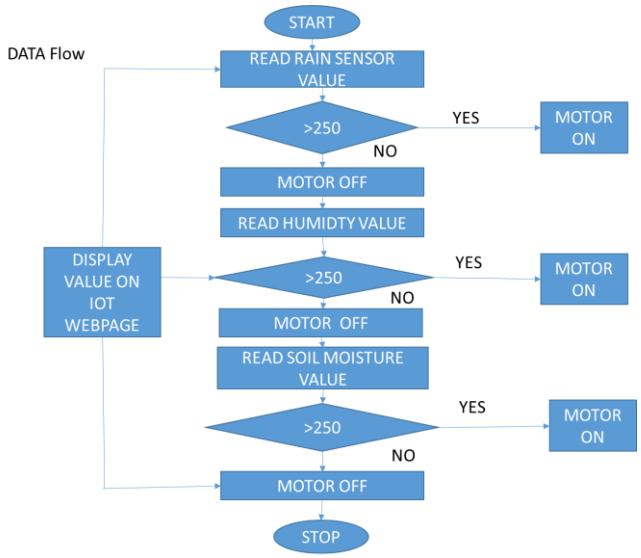

Figure. Flow chart of Agricultural Field Monitoring and Operations Control over Internet

WORKING PRINCIPLE

Front End:

IOT webpage:

Internet of things (IoT) was experienced by everyone who has mobile phones, laptops, wearable's, washing machine, smart speaker, and electronic gadgets connected with the Internet. Many areas that IoT will make changes, which includes Web Design and Development. It can help us to develop the future effectively. Internet of Things is a technology that connects the digital world by transforming the UI interactions between the man and machine. Now IoT entered into the realm of Web Development, and make users more interactive with the websites. And create a smart & significant role in the development world. It's immense power of connectivity and computerized sensibility feature to help to understand the client features and build the right strategies.

Back-End:

Arduino application:

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Processing.

VI SYSTEM TESTING AND RESULTS

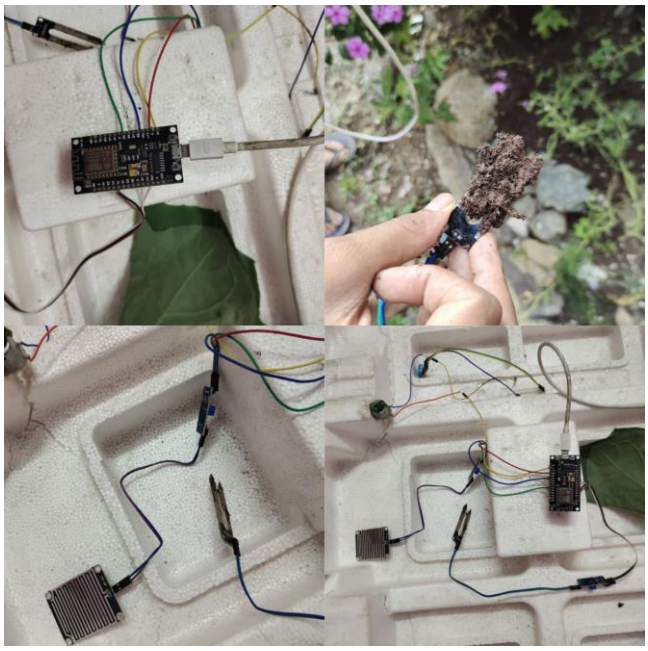

Figure. Hardware Setup of the System

VII CONCLUSION

The application of agriculture networking technology is need of the modern agricultural development, but also an important symbol of the future level of agricultural development; it will be the future direction of agricultural development. After building the agricultural water irrigation system hardware and analyzing and researching the network hierarchy features, functionality and the corresponding software architecture of precision agriculture water irrigation systems, actually applying the internet of things to the highly effective and safe agricultural production has a significant impact on ensuring the efficient use of water resources as well as ensuring the efficiency and stability of the agricultural production.

VIII FUTURE SCOPE

IOT proves to have a huge scope as it provides a unique opportunity for businesses to turn data into insights. There are a number of contributing factors as well that drive the

adoption of IOT such as improved sensors, device connections, the evolution of lifestyle and mobility.

Data from IoT networks enables us to have better Jiber, Y.; Harroud, H.; Karmouch, A, "Precision agriculture monitoring framework based on WSN," Wireless Communications and Mobile Computing Conference (IWCMC), 2011 7th International, vol., no.pp.2015, 2020, 4-8 July 2011

Eric D. Hunt., ET al.2008. "The development and evaluation of a soil moisture index." Int. J. Climatol. Published online in Wiley InterScience. www.interscience.wiley.com

Uchinuno, T.; Yasunaga, Y.; Keiichi, M.; Sugimoto, N.; Aoqui, S.-I, "Development of Knowledge Sharing System for Agriculture Application," Advanced Applied Informatics (IIAIAAI), 2013 IIAI International Conference on, vol., no., pp.108, 111, Aug. 31 2013- Sept.4 2013

Wei Lin, "Real time monitoring of electrocardiogram through IEEE802.15.4 network," Emerging echnologies for a Smarter World (CEWIT), 2011 8th International Conference & Expo on , vol., no.,pp.1,6, 2-3 Nov. 2011

Control of various systems in different industries.

REFERENCES

Jiber, Y.; Harroud, H.; Karmouch, A, "Precision agriculture monitoring framework based on WSN," Wireless Communications and Mobile Computing Conference (IWCMC), 2011 7th International, vol., no.pp.2015, 2020, 4-8 July 2011

Eric D. Hunt., ET al.2008. "The development and evaluation of a soil moisture index." Int. J. Climatol. Published online in Wiley InterScience. www.interscience.wiley.com

Uchinuno, T.; Yasunaga, Y.; Keiichi, M.; Sugimoto, N.; Aoqui, S.-I, "Development of Knowledge Sharing System for Agriculture Application," Advanced Applied Informatics (IIAIAAI), 2013 IIAI International Conference on, vol., no., pp.108, 111, Aug. 31 2013- Sept.4 2013

Wei Lin, "Real time monitoring of electrocardiogram through IEEE802.15.4 network," Emerging Technologies for a Smarter World (CEWIT), 2011 8th International Conference & Expo on , vol., no.,pp.1,6, 2-3 Nov. 2011