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IOT Based Green House Monitoring using ESP8266

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ABSTRACT: This paper describe of the efficacious use of Internet of Things technology could be used to monitoring, collecting, connecting and controlling the system of many parameters of environment like as temperature, humidity, and soil moisture. In greenhouse the weather and soil moisture should be independent of the natural agent. Also we used ESP8266 Wifi module, microcontroller and pump. It shows the use of ESP8266 based of irrigation systems, which is also simple and cost-effective.

This smart greenhouse system has DHT11 sensor, and soil moisture sensor that measure the humidity, temperature, soil moisture respectively. If the level of sensed values below of the threshold level DHT11 sensor and soil moisture sensor send the signal to that esp8266 microcontroller and notification is send through the thing speak, and based on that sensors.

IOT is used to keep the farmers updated about the status of parameters values. Information from the sensors is regularly updated on a thing speak cloud through which a farmer can check whether the waterpump are ON/OFF at any given time. Also, the sensor readings are transmitted to a Thing speak channel to generate graphs for analysis. The advantage of the system is that the user of the farm can remotely monitor their farm on IOT. The main purpose of this project is to make smart irrigation using Thingspeak, Sensors and IOT technology.

KEYWORDS:- ESP8266 Wifi module, DHT11 sensor, Soil Moisture sensor, IOT, Thingspeak.

I. INTRODUCTION

In our country, Today we all know agriculture is the largest economic sector, and the majority of the population is dependent on the irrigation, which make contribution to the development in India. When combination of new technology and agriculture, then it gives better results. In order to support greater production in farms, the requirement of the amount of fresh water used in irrigation also rises. Currently, development of agriculture account 835 of the requirement of the total water consumption in India. Unfortunately, unplanned use of water inadvertently results in wastage of water. This suggests that there is an urgent need to develop systems that prevent water wastage without imposing pressure on farmers.

Most of the farmers use the traditional way of farming, but this can be overcome modern farming methods by apply technology to be automation agriculture, such as apply IoT in agriculture. By using IoT technology in agriculture will increase the productivity of the crop. In the IoT is a system is that combines hardware components, software within these items connected to the internet to empower easy to access and interaction with them. From the IoT technology, farmer can be monitoring and controlling their farm in everywhere and everytime. So, the agriculture method should be updated to give a maximum quantity of the crop production.

II. LITERATURE SURVEY

Introduction

In A Remote Measurement of monitor and control System for Greenhouse Based on Thingspeak reposed system introduced Wifi/GSM-message remote measurement and control system for greenhouse based on mobile-based database system connected to ESP8266 Wifi module with the help of DHT11 sensor, Soil moisture sensor. Base station is developed by using a microcontroller, Wifi module, sensors and actuators. In practical operation, the central station receives and sends messages through Wifi/GSM module. Temperature, Humidity, Soil Moisture these value of parameters to be measured in cloud platform (Thingspeak), and then in base stations parameters including the temperature, humidity, soil moisture. A Greenhouse is a building where plants are grown. Greenhouses are often used for growing flowers, vegetables, fruits, and tobacco plant. Basic factors affecting plant growth are sunlight, water content in soil, temperature, etc. These physical factors are hard to control manually inside a greenhouse and a need for automated design arises. Automatically controlling all the factors that affect plant growth is also a difficult task as it is expensive and some physical factors are inter-related, for example, temperature and humidity are related in a way when temperature raises humidity reduces therefore controlling both together is difficult. Because the temperature and humidity of greenhouse must be constantly monitored to ensure optimal conditions, a wireless sensor network can be used to gather the data from point to point. The data from the greenhouse will be measured by the sensor and the data that are collected will be sending to the receiver. The data that has been read will be displayed on the LCD screen. By using this system, the process of monitoring is easier and it is also cheaper for installation and maintenance process. [1] Mainly focuses on reviews in the field of remote monitoring and control, the technology used and their potential advantages. The paper proposes an innovative GSM/Wifi based remote controlled embedded system for irrigation. The system sets the irrigation time depending on the temperature and humidity reading from sensors and type of crop and can automatically irrigate the field when unattended. Information is exchanged between far end and designed system message on GSM network. A Bluetooth module is also interfaced with the main microcontroller chip which eliminates the SMS charges when the user is within the limited range of few meters to the designated system. The system informs users about many conditions like status of electricity, dry running motor, and increased temperature, water content in soil with SMS on GSM network or by Bluetooth. In R. Suresh et al. (2014) mentioned about using automatic microcontroller based rain gun irrigation system in which the irrigation will take place only when there will be intense requirement of water that save a large quantity of water. These systems bring a change to management of field resource where they developed a software stack called Android is used for devices that include an operating system, middleware and key applications. The Android SDK provides the tools and APIs necessary to begin developing applications on the Android platform using the Embedded C programming language. Mobile phones have almost become an integral part of us serving multiple needs of humans. This application makes use of the GPRS feature of mobile phone as a solution for irrigation control system. These system covered lower range of agriculture land and not economically affordable. In IOT SMS alarm system based on SIM900A, an IOT alarm system based on SIM900A module of SIMCOM Company was designed for greenhouse. The system can gather environmental parameters such as air temperature and air humidity. Meanwhile, with the use of AT command, this system can also realize SMS automatic sending and receiving, environmental parameters overrun alarm and insufficient balance alarm. Through the system setting, the alarm message can be sent to the user-specified mobile phone automatically no matter what the users' location is. This system as a typical application of IOT in the agriculture has got some satisfactory results in the actual operation. 2.2 Summary In this scenario, We only survey on this project how it is and how they work.

III. METHODOLOGY

connection model

Here we have given proposed system model of our project.

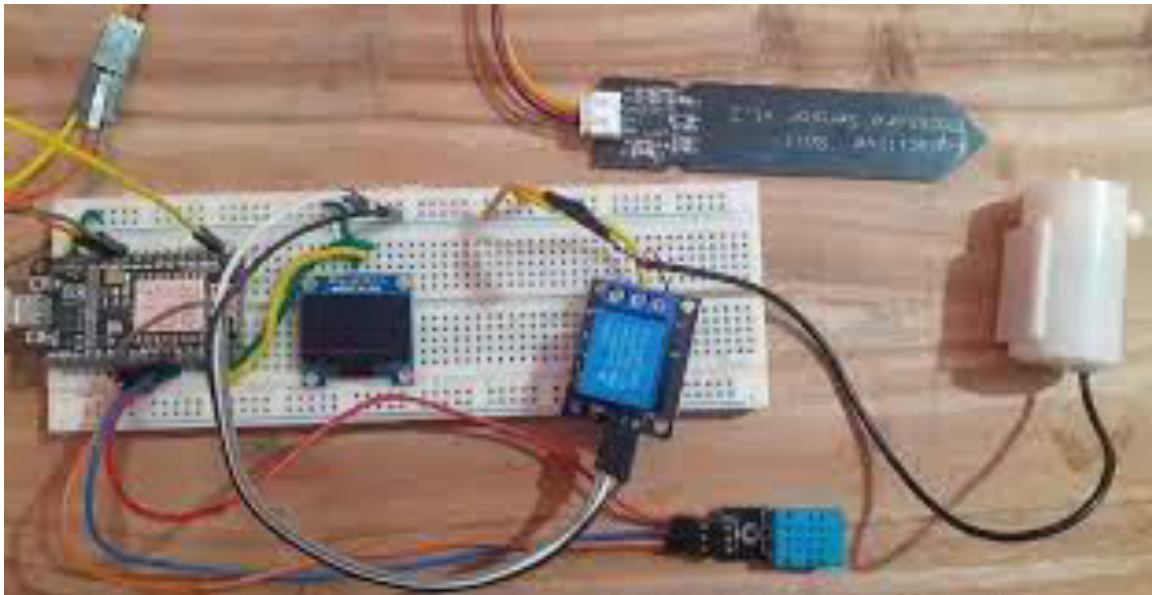
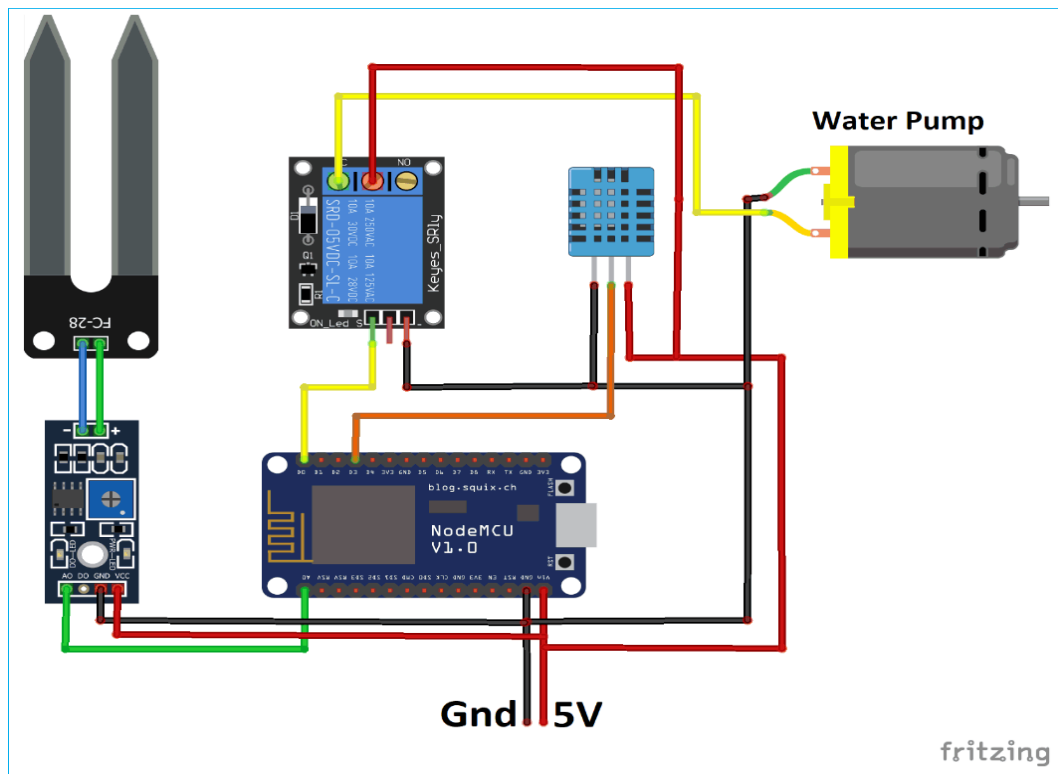
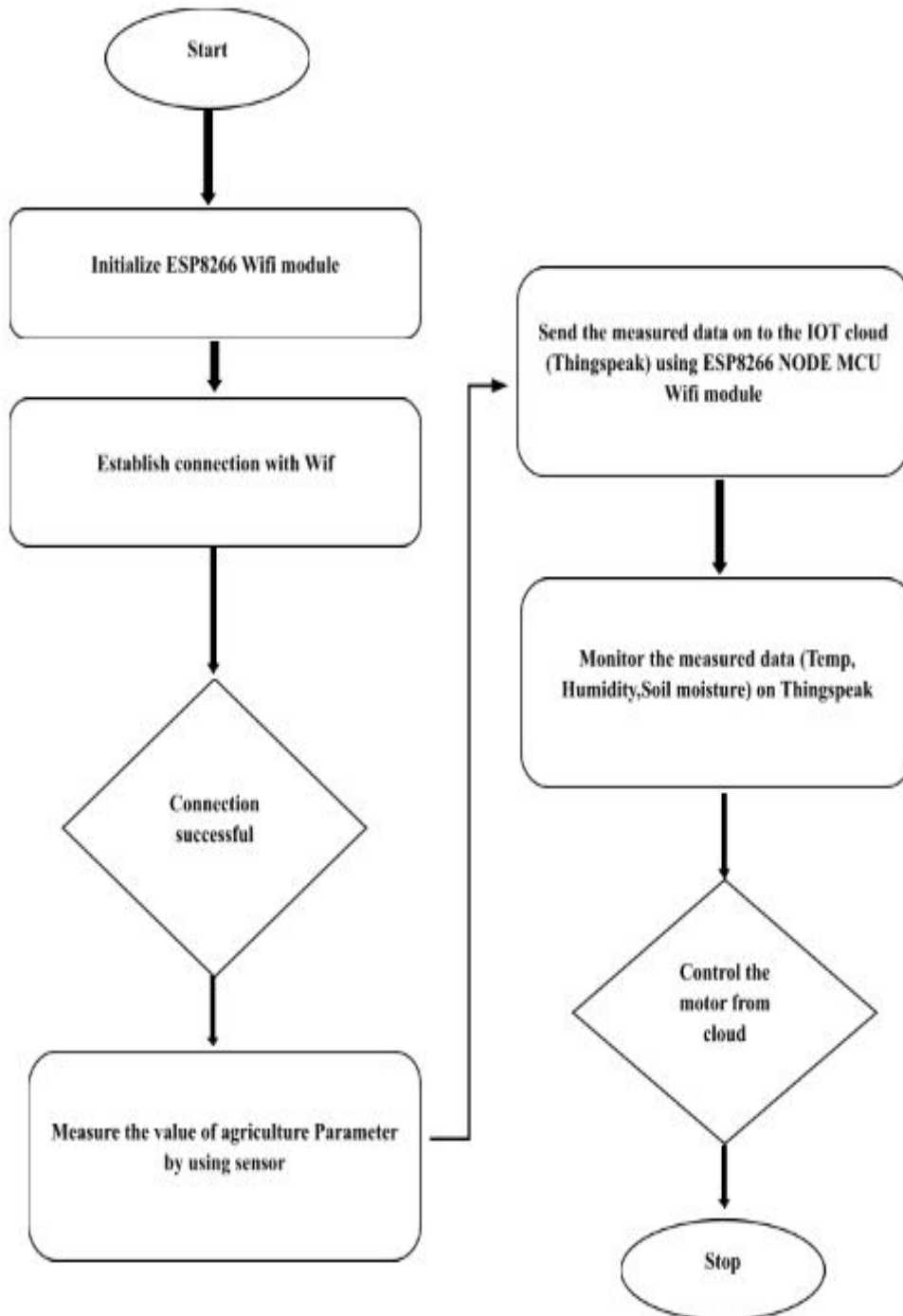


Fig 3.1: IOT system



3.2:Figure gives the interconnection of the different blocks

IV. FLOW CHART



V. RESULT & DISCUSSION

5.1 Introduction

The DHT11 sensor, Soil moisture sensor they detects humidity, temperature And soil moisture level on the cloud platform of Thingspeak. When I connect this sensor to ESP8266 microcontroller using Wifi module gives the data to on Thingspeak in Graph level or also gives on number.

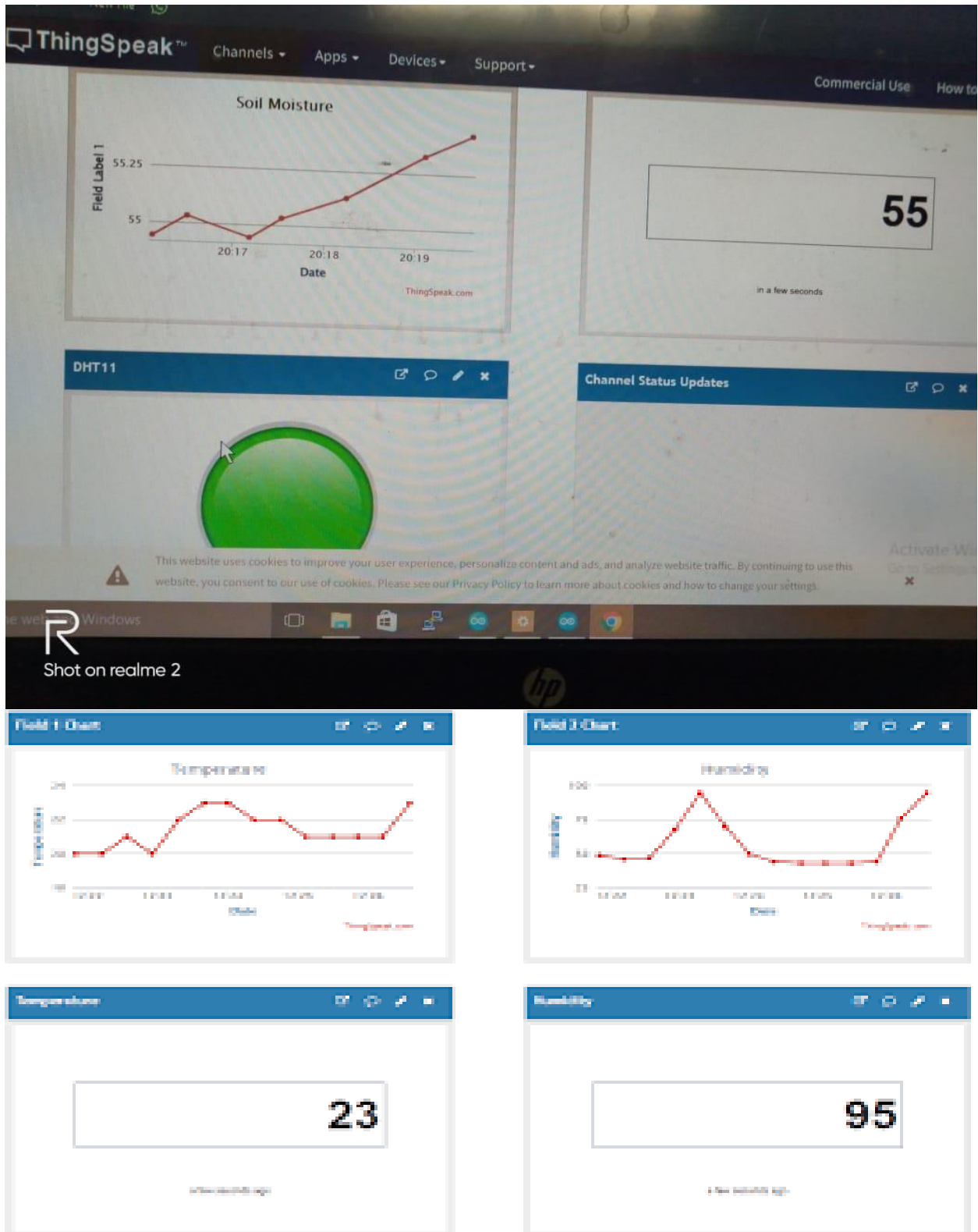


Fig5.1: Graph of Temp & Humidity level

5.2 RESULT

The Smart Irrigation System is integrated into the mobile application system to enable the user to easily monitor and control the irrigation of the farm field. On the mobile application system, there is an interface to view data collected directly from the sensors with the help of the DHT11, Soil Moisture which is the cloud that creates a bridge between hardware and the cloud database. The main interface of the mobile application is the main menu that displays the login page of the system. This is to create a secured login for each user and to prevent others from knowing data owned by another person. Once the user successfully login to the Thingspeak, there is another menu display the options control the irrigation system. The user has to select any of the options to go about the system. The control option leads the user to control the water pump to either force “ON” or “OFF”, where it navigates the pump's control based on the sensor's value that set in the system. Then, the control system leads the user to access the ThingSpeak.com. This process is to display graphs of all the sensors which display the report of the status of the farm field's soil. The flow of the Smart Irrigation System that integrated into the mobile application system.

5.3 Application

User friendly.

Easily implemented.

Focuses on main parameters.

Easy network coverage.

Quality of food.

Healthy world.

5.4 Advantages

Affordable.

Improve the utilization efficiency.

Easily useable.

VI. CONCLUSION

This framework is normal for monitoring & controlling parameters in green house by using mobile /computer application. NODE MCU ESP8266 is likewise utilized to send the parameters on cloud like Thingspeak. This structure is useful for anyone but mostly useful for farmer. This system can be utilized in green house. In conclusion, the Smart Irrigation System meets the objective to monitor and control the irrigation system of the farm field. It is based on the technology of Internet of Things which is integrated with few sensors: a) DHT11 sensor b) Soil moisture sensor To control the status of the farm field's soil. In the meantime, these sensors are connected to the Internet with the Wi-Fi module. This interconnected activity is to give additional sensitivity to the irrigation system. The data collected on the cloud (ThingSpeak) will be downloaded and displayed in graphical form. The user can monitor the irrigation system with the report displayed from the application system on the mobile platform. The application works to display readings from sensors and control the water pump in case of an emergency. This is to alert the user and make the system easy to use. 6.2 SUMMARY In this chapter we learn about the conclusion & future scope. Integrated with few sensors: (i) DHT11 sensor, (ii) Soil moisture sensor, to control the status of the farm field's soil.

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