International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 08 Issue: 03 | March - 2024 SJIF Rating: 8.176 ISSN: 2582-3930

Green House Monitoring & Controlling System Using IoT

Mr. Sonawane Vaibhav. C.[1], Miss. Petkar Shrutika. S.[2], Mr. Raut Shrikant.S.[3]

Miss. Darade Shraddha S.[4], Prof. Lohakare S. S.[5], Dr. Tapre P. C.[6]

[1234]Student, Department of Electrical Engineering, S.N.D. College of Engineering and Research Centre, Yeola, Nashik Maharashtra

[5]Prof, Department of Electrical Engineering, S.N.D. College of Engineering and Research Centre, Yeola, Nashik Maharashtra

[6]Prof & HoD, Department of Electrical Engineering, S.N.D. College of Engineering and Research Centre, Yeola, Nashik Maharashtra

---

Abstract - Greenhouse monitoring and Control System is the approach in which the rural areas farmers will be benefitted by this Greenhouse environment. This project focuses on the Generic architecture and it can also be applied for many other automation-based application. Direct supervision of human will be replaced. By referring the different papers, we have proposed the system based on the limitations which is present in the monitoring and control system. Greenhouse is where the plants are grown with the controlled manner. Nowadays, Greenhouse construction is in greater demand due to the lack of land availability and urbanization. Growing crops will be reserved mainly by this proposed Greenhouse project. From the location wireless, Greenhouse using IoT can be used to monitor and control many Greenhouse buildings.

***Key Words*: Atmospheric Sensors, Iot, Arduino UNO, Website or Cloud, DC Motor, Relay.**

1.INTRODUCTION

India is an agricultural country. Around 58% population of India depends of agriculture sector. Agriculture is the art of producing crops. To controlling climatic condition, grow the plants sudden change in weather is not good for agriculture. Untimely rain can destroy the crops. Less amount of light affect the growth of plants. To provide all the things as per need of crops. Less amount of light growth of plants. To provide all the things as per need of crops. All the data of the sensors will be send to farmer's mobile. This system will help farmers with less number of labors whenever we go out of town for few days, worry about the plant caring. This system automatically provided all things like water, light etc. and keep you updated by sending message to your cell phone.

2. LITERATURE REVIEW

Any research ground work is depending on literature investigation. Based on the studies carried out by several researchers and their contribution to research field motivates for future scopes of research. In this chapter review of several research papers by various authors and technical reports has been discussed such as about Greenhouse Monitoring & Controlling Using IoT.

1.Adity Vishwakarma (et.al), (July 2020) "IoT based greenhouse monitoring and controlling system."In this research paper, NodeMCU ESP8266 mobile technology that applied to greenhouse monitoring and control .It great helps farming and increasing productivity .This model of technology based farming should surely be a success.

2.Pandu Naik (et.al), (May 2021) "Greenhouse Environmental Monitoring & Controlling System Using IoT."The Greenhouse project design betterment of the crop growth . The software and hardware working is smoothly done.

3.Jenish D. (et.al), (August 2022) "IoT Based Greenhouse Monitoring & Controlling system. "Smart greenhouse monitoring system implemented successfully using IoT concept. Increase overall yield.

4.Shubham Borule (et.al), (Dec 2022) "Greenhouse Environment Monitoring & Controlling System."In this research paper the smart greenhouse able to produce crops without any pesticides. It makes farming more profitable and efficient while also reducing farmer effort and time.

5.Shivnaresh Singh (et.al), (June 2021) "Greenhouse Environmental Monitoring & Controlling System."We survey the atmospheric condition and inspection the crops .from this farmer's save time ,money, manpower

3. PROJECT OBJECTIVES

Most of the greenhouses in Malaysia today still rely on the human manpower to maintain the facilities without proper control system. Manpower is prone to error. To run the plant efficiently, a control system has to be apply that can simultaneously reduce the cost of operation, without having to rely too much on the manpower. It also can improve the production of the plants, hence increase the profit of the organization. Besides, as Malaysian climate is categorized as equatorial, with hot and humid condition throughout the year, this application will enable the crops to grow in perfect condition, and increase the productivity without having to depend on the weather and environment conditions naturally.

4. BLOCK DIAGRAM

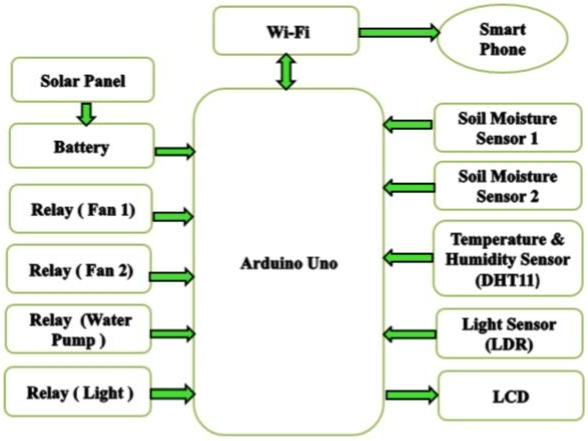

Figure1. Block Diagram of Greenhouse Monitoring & Controlling System Using IoT

5. CIRCUIT DIAGRAM

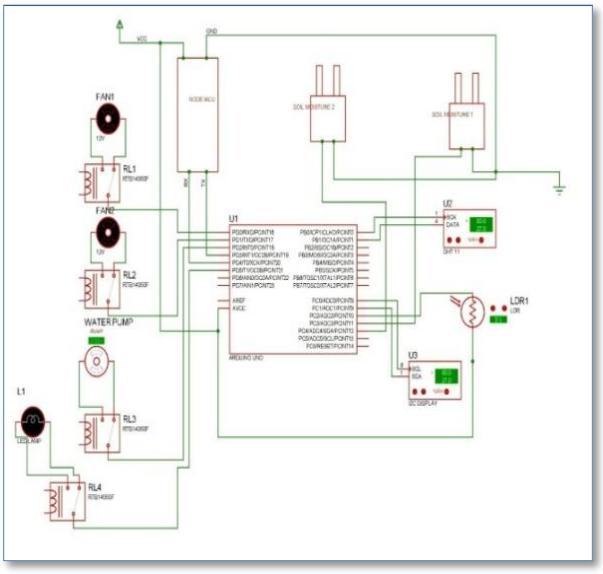

Figure2. Circuit Diagram of Greenhouse Monitoring & Controlling System Using IoT

6. HARDWARE REQUIRED

1.Temperature & Humidity Sensor (DHT11) :

Figure 3. Temperature & Humidity Sensor

DHT11 is a low-cost digital sensor for temperature and humidity. This sensor can be used with Arduino Raspberry Pi, etc to instantly measure humidity and temperature easily interfaces with any microcontroller. DHT 11 humidity and temperature sensor is available as sensor and module the difference between the sensor and the turn on LED.DHT11is a relative humidity sensor to measure ambient or uses thermistor and capacitive humidity sensor

2. Soil Moisture Sensor :

Figure4. Soil Moisture Sensor

A soil moisture sensor is a sensor used to measure soil water content. Direct gravimetric measurement of soil moisture requires removal, drying, and weighing of the sample. This sensor measures bulk water content without directly using several other soil parameters such as dielectric constant, electrical resistance, neutron interaction, and moisture exchange.

3. Light Sensor (LDR) :

Figure5.Light sensor

LDRs are small light sensing devices, also known as photoresistors. An LDR exhibits resistance when the amount of light incident on it changes. The resistance of LDR decreases with increasing light intensity. This property allows them to be used for photosensitive circuits.

4.Arduino

Figure 6. Arduino

Arduino is an open-source electronic platform based on software and easy to use software. An Arduino board is capable of reading an input a light on a sensor, a button press, or a

Twitter message and turning it into an output urning on a motor, turning on an LED, printing something online. You can tell your board what to do by sending a series of instructions to the microcontroller on the board. To do this, you use Arduino programming language (based on Wiring) and Arduino Software (IDE) based on processing.

5. Wi-Fi :

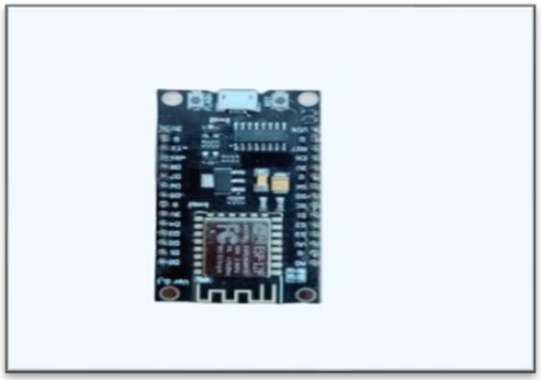

Figure 7.Wi-Fi

Node MCU ESP8266 can be controlled from local network or internet. This module can be programmed with Arduino. The NodeMCU development kit/board consists of an ESP8266 chip with Wi-Fi capability. The ESP8266 is a low-cost Wi-Fi chip with TCP/IP protocol developed by Espressif Systems. For more information about the ESP8266, see ESP8266 WiFi Module.

7. WORKING OPERATION

Each component is connected to the required power of ± 5V. 12V input supply to the regulated power supply provide constant 5V to all devices like Sensor, LCD, Relay, Pump etc. Install the application in mobile. switch on the supply. Device connect to the mobile. The sensors value is set like DHT11 is 0-50^0 C, 20-90%, LDR is 2.4-3.6V, Soil Moisture 3.3-5V etc. The value will be above or below the set value then relay is turn on also fan, bulb, motor will turn on. The all sensor connected to Arduino gives digital signal to the Arduino connected to ESP8266 will sends the signal to mobile.

8. ADVANTAGES

- Good production of foods.
- Off -seasons crops.
- Grow a wide verity of plants.
- Save energy.

9. APPLICATIONS

- Rural areas and agriculture sector.
- It used to control and monitor the temperature at home like in bedroom, kitchen.
- It also be used in agriculture farm and gardens.

10. CONCLUSION

We have created a low cost and inexpensive NodeMCU mobile technology used in monitoring and control of greenhouse agriculture. The model connects and controls its operations via the internet. Technology improves flexibility and operational efficiency through wireless connectivity.

REFERENCES

[1].Aditya Vishwakarma, Aniket Sahu, Nedeem Sheikh,Peeyoosh Payasi, Saurabh Rajput, Laxmi Srivastaava, “IoT Based Greenhouse Monitoring & Controlling System”, IEEE, July10-12, 2020 .
[2]. Pandu Naik, Sujana Sr, Amal Murali,Sagar Shetty,Sanjana Vasu , “Greenhouse Monitoring & Controlling Using IoT”,IRJMETS, ISSN-2582-5208, July 2021.
[3]. Jenish D.,Ferlin Shahila,Lilly Evangelin , “IoT Based Greenhouse Monitoring & Controlling System,” JETIR, ISSN-2349-5162, August 2022.
[4]. Shubham Borule,Shubham Ramteke,Mohit Tamgadge, “Greenhouse Environment Monitoring & Controlling System,” IJISRT, ISSN No. 2456-2165, Dec 2022.
[5]. Shivnaresh Singh,Abhishek Kumar,Dinesh Singh, “Greenhouse Environmental Monitoring & Controlling System,” IRJET, ISSN-2395-0056, May 2021.
[6]. Pranshu Dubey, Manish Misha, Naman Bansal, Laksh Singhal, Khyati Kandpal, “IoT Based Greenhouse Environment Monitoring & Controlling Using Arduino;” IJRES, ISSN-2320-9364, June 2021.
[7]. http://ieeexplore.ieee.org