International Journal of Advances in Engineering and Management (IJAEM)
Volume 5, Issue 6 June 2023, pp: 532-536 www.ijaem.net ISSN: 2395-5252

Green House Monitering System Using Iot

Dr. Channappa Bhyri1, Sagar 2, Vaijinath 2, Sainath 2, Suneela Kumar 2

1. *Professor, E&IE Department, PDA College of Engineering Kalaburagi, Karnataka585102*
2. Final Year Students of E&IE Department

Date of Submission: 10-06-2023 Date of Acceptance: 20-06-2023

ABSTRACT
Smart Green House android app is succeeding to observe and managing the microclimatic environment inside a Green House. From the green house easily get soil moisture, humidity and temperature sensor value to android app, according to sensors values and we set predefined threshold values for each sensor,depending on sensor readings we are going to control using water sprayer, cooling fan, rooftop and focus light and just press the button in android app we can make on/off motors and it also has datasheet of all horticulture plantation and season wise precaution material for monitoring and controlling. The intention of this project is to design a simple, easy to install, user friendly to monitor and record the values of temperature, humidity, soil-moisture and sunlight of the natural environment that are continuously modified and controlled in order optimize them to achieve maximum plant growth and yield. The result shows that the situation specified in sensor‘s database and system in actually is proper. The achieved test result concludes that the system is working properly.

I. INTRODUCTION

Weather forecasting is the application of science and technology to predict the state ofthe atmosphere for a given location. Human beings have attempted to predict the weather informally for millennium and formally since the nineteenth century. Weather forecasts are made by collecting quantitative data about the current state of the atmosphere on a given place and using scientific understanding of atmospheric processes to project how the atmosphere will evolve on that place. Weather is driven by air pressure (temperature and Humidity) differences between one place and another. These pressure and temperature differences can occur due to the sun angle at any particular spot, which varies by latitude from the tropics. The atmosphere is a chaotic system, so small changes to one part of the system can grow to have large effects on the system as a whole. This makes it difficult to accurately predict weather more than a few days in advance, though weather forecasters are continually working to extend this limit through the scientific study of weather, meteorology. It is theoretically impossible to make useful day-today predictions more than about two weeks ahead, imposing an upper limit to potential for improved prediction skill. Once an all-human endeavor based mainly upon changes in barometric pressure, current weather conditions, and sky condition, weather forecasting now relies on computer-based models that take many atmospheric factors into account. Human input is still required to pick the best possible forecast model to base the forecast upon, which involves pattern recognition skills, Tele-connections, knowledge of model performance, and knowledge of model biases.

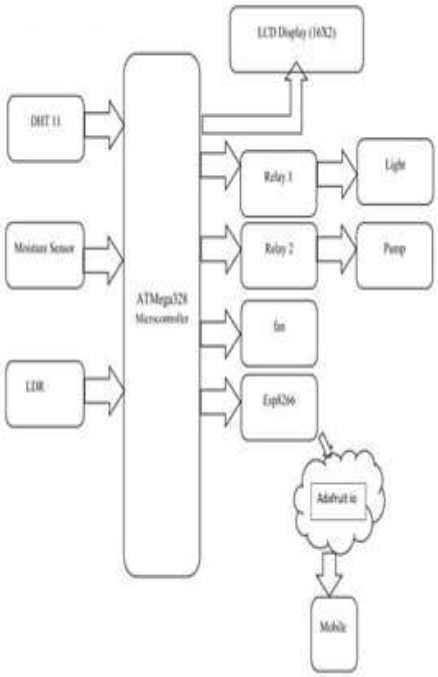
II. LITERATURE REVIEW

Through weather monitoring system we can collect the information about humidity and temperature and according to current and previous data we can produce the results in graphical manner in the system. After reviewing many articles, there are presently no papers that mention monitoring the combination of temperature, lighting and humidity in one integrated system and have actuators to modify these settings. In addition to this, there is one research paper that has discussed monitoring these three environmental conditions; however, there has been no mention about having actuators to modify. So our main idea was to coin a system that can sense the main components that formulates the weather and can be able to forecast the weather without human error. Ancient weather forecasting methods usually relied on observed patterns of events, also termed pattern recognition. For example, it might be observed that if the sunset was particularly red, the following day

International Journal of Advances in Engineering and Management (IJAEM)
Volume 5, Issue 6 June 2023, pp: 532-536 www.ijaem.net ISSN: 2395-5252

often brought fair weather. This experience accumulated over the generations to produce weather lore. However, not all of these predictions prove reliable, and many of them have since been found not to stand up to rigorous statistical testing. The simplest method of forecasting the weather, persistence, relies upon today's conditions to forecast the conditions tomorrow. This can be a valid way of forecasting the weather when it is in a steady state, such as during the summer season in the tropics. This method of forecasting strongly depends upon the presence of a stagnant weather pattern. It can be useful in both short range forecasts and long range forecasts. Measurements of barometric pressure and the pressure tendency (the change of pressure over time) have been used in forecasting since the late 19th century. International Journal of Engineering Research and General Science Volume 3, Issue 2, March-April, 2015

III. SYSTEM OVER VIEW



IV. ARDUINO UNO BOARD

Component Explanations

- **Analog input Pins:** Pins (A0-A5) that take-in analog values to be converted to be represented with a number range 0-1023 through an Analog to Digital Converter (ADC).
- **ATmega328 chip:** 8-bit microcontroller that processes the sketch you programmed.
- **Built-in LED:** In order to gain access or control of this pin, you have to change the configuration of pin 13 where it is connected to.
- **Crystal Oscillator:** clock that has a frequency of 16MHz
- **DC Jack:**where the power source (AC-to-DC adapter or battery) should be connected. It is limited to input values between 6-20V but recommended to be around 7-12V.
- **Digital I/O pins:**Input and output pins (0-13) of which 6 of them (3, 5, 6, 9, 10 and 11) also provide PWM (Pulse Width Modulated) output by using the analogWrite() function. Pins (0 (RX) and 1 (TX)) are also used to transmit and receive serial data.
- **ICSP Header:** pins for "In-Circuit Serial Programming" which is another method of programming.
- **ON indicator:** LED that lights up when the board is connected to a power source.
- **Power Pins:** Pins that can be used to supply a circuit with values VIN (voltage from DC Jack), 3.3V and 5V.
- **Reset Button:**A button that is pressed whenever you need to restart the sketch programmed in the board.
- **USB port:**Allows the user to connect with a USB cable the board to a PC to upload

International Journal of Advances in Engineering and Management (IJAEM)
Volume 5, Issue 6 June 2023, pp: 532-536 www.ijaem.net ISSN: 2395-5252

sketches or provide a voltage supply to the board. This is also used for serial communication through the serial monitor from the Arduino software.

V. SENSORS

➢ **DHT11 SENSOR**

Specifications:-

- Power Supply： 3.3~5.5V DC
- Output： 4 pin single row
- Measurement Range： Humidity 20-90%RH, Temperature 0~50℃
- Accuracy： Humidity +-5%RH, Temperature +-2℃
- Resolution： Humidity 1%RH, Temperature 1℃
- Interchangeability： Fully Interchangeable
- Long-Term Stability：<±1%RH/year

➢ **SOIL MOISTURE SENSOR**

- Operating voltage 3.3V-5V
- Module dual output mode, digital output, and analog output more accurate.
- With fixed bolt hole for easy installation
- PCB size: 3cm * 1.6cm
- Power indicator (red) and digital switching output indicator (green)
- Comparator LM393 chip, stable

➢ **LIGHT SENSOR (LDR)**

A Light Dependent Resistor (LDR) or a photo resistor is a device whose resistivity is a function of the incident electromagnetic radiation. Hence, they are light sensitive devices. They are also called as photo conductors, photo conductive cells or simply photocells. They are made up of semiconductor materials having high resistance.

1. Node MCU (ESP8266)

ESP8266 is the wifi module used in this hardware design. ESP8266 provides portability and flexibility. Internet of Things application helps us to achieve goals like most minimal force utilization with a mix of a few restrictive methods.

2. LCD DISPLAY

LCD (liquid crystal display) is the technology used for displays in notebook and other smaller computers. Like light-emitting diode (LED) and gas-plasma technologies, LCDs allow displays to be much thinner than cathode ray tube (CRT) technology. LCDs consume much less power than LED and gas-display displays because they work on the principle of blocking light rather than emitting it.

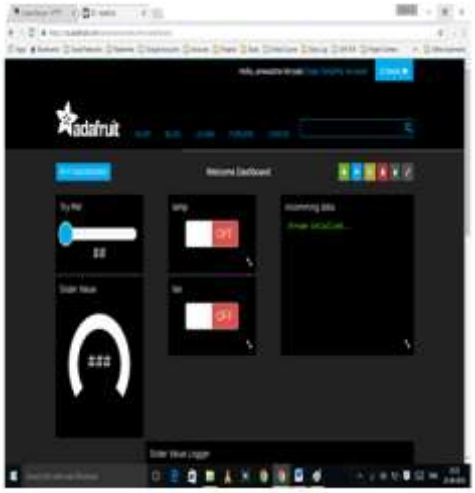
International Journal of Advances in Engineering and Management (IJAEM)
Volume 5, Issue 6 June 2023, pp: 532-536 www.ijaem.net ISSN: 2395-5252

3. RELAY MODULE

A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a low-power signal (with complete electrical isolation between control and controlled circuits), or where several circuits must be controlled by one signal.

4. IOT SERVER

- Adafruit IO is a system that makes data useful. Our focus is on ease of use, and allowing simple data connections with little programming required.
- IO includes client libraries that wrap our REST and MQTT APIs. IO is built on Ruby on Rails, and Node.js.
- Adafruit IO is currently in beta. If you would like to join the beta, head over to io.adafruit.com to sign up.



VI. APPLICATION

- The uniform spread of water to all crops.
- Increases the involvement of modern people in agriculture. Farmers no need to depend on the electricity.
- Any plant can be planted outside t/he farming season.
- Protect plants against rainy seasons, storms, wind and frost. Control pests and diseases. Total automation of greenhouses / nurseries / bio tech parks. Can be used domestically. Reducing fertilizers waste.
- Suitable for Tissue culture plants.
- Ask to use, install, operate troubleshoot.
- Useful for small scale…

VII. CONCLUSION

This concludes that the present work was a success and it will provide a competent method for recording real time weather readings and help farmers whose livelihood depends on the weather in a country like India to produce better quality crops. It can be used to gather information about the requirements for each area over the years. The gathered information is used to determine the optimal conditions for plants to grow and the farmer can modify the environment suitable for the growth of the plant. This, in turn will have a huge impact on agriculture and also on farmers throughout the world

REFERENCES

[1]. Karuna.M.Patil, IOT Based Wireless Networking Infrastructure for Greenhouse Management through Web Application Using ESP8266 International journal of

innovations in Engineering and Science, Vol. 7, 20 February 2022.

[2]. Devendra R. bhodke Greenhouse Monitoring Using IOT Technology International Research Journal of Engineering and Technology Volume:3 issue 10 Oct-2016.

[3]. Ushus.S.Kumar a Design of Agriculture Greenhouse Monitoring System using Iot IJRTI Vol.12 No.10 27 March 2021.

[4]. Prof.D.O.Shrisath IOT Based Greenhouse Automation using Arduino International journal of innovative research in computer science and technology vol-5, issue-march-2017.

[5]. Jayant borde Green House Monitoring and control system using IOT IJARIIE-ISSN(0)-2395-4396 vol-8, issue-2 2022.

[6]. S Dinesh Kumar IOT Based Greenhouse Monitoring and controlling, IJRTI|Vol 3, Issue 8|ISSN: 2456-3315 , 2018

[7]. Porsevi T Automatic Control AND Greenhouse System Using IOT Turkish Journal of Computer and Mathematics Education Vol.12 No.11 2708-2715 10 May 2021.

[8]. Basnet Raj IOT Greenhouse Monitoring System Western Michigan University 12 jul 2021.

[9]. M.Krishna Mohan Greenhouse Monitoring System Using IOT International Journal for Modern in Science and Technology Volume: 03Issue no.02 March 2017.

[10]. Mr.V.V.Sutar Implementation of greenhouse environment monitoring and controlling system based on android mobile platform.Vol.No.4, Issue No.6 Jun 2016.

[11]. Vishwanath Naik IOT based Greenhouse Monitoring System International journal of electronics and communication vol-6, Issue-6, June 2015.

[12]. Satoh. F, Itakura. M, “Cloud-based Infrastructure for Managing and Analyzing Environmental Resources”, SRII Global Conference, pp.325- 334, 201.