



IJIRCCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 12, Issue 4, April 2024

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.379



9940 572 462



6381 907 438



ijircce@gmail.com



www.ijircce.com

Smart Home Automation Using the Internet of Things

Mrs. Dakshayini M R, Ganesh B S ,Girish B S ,Sahana K V, Venkatesh Kalamangi

Assistant Professor, Dept. of ECE, Malnad College of Engineering, Hassan, Karnataka, India

UG Student, Dept. of ECE, Malnad College of Engineering, Hassan, Karnataka, India

UG Student, Dept. of ECE, Malnad College of Engineering, Hassan, Karnataka, India

UG Student, Dept. of ECE, Malnad College of Engineering, Hassan, Karnataka, India

UG Student, Dept. of ECE, Malnad College of Engineering, Hassan, Karnataka, India

ABSTRACT: The advent of Internet of Things (IoT) technology has revolutionized home automation systems, enabling efficient and intelligent control of various household appliances and devices. In this research, we present a comprehensive smart home automation system utilizing IoT principles. The system integrates a range of sensors including DTH11, LDR, ultrasonic, gas, and IR sensors, along with outputs such as a buzzer, bulb, fan, and servo motor. The core components of the system include NodeMCU ESP8266 for wireless connectivity and relay modules for efficient control. The proposed system offers multifaceted functionalities to enhance household convenience and safety. Firstly, it utilizes ultrasonic sensor data for automatic gate opening using a servo motor. Secondly, the IR sensor detects objects within the room, triggering the activation of room lights via bulb. Additionally, the LDR sensor enables automatic lighting control based on ambient light levels, ensuring optimal illumination when needed. Moreover, the system incorporates gas sensors to detect potential gas leaks, activating a buzzer alarm for prompt attention. Furthermore, temperature and humidity sensors are employed to regulate the indoor environment, automatically turning on the fan when thresholds are exceeded. To provide remote monitoring and control capabilities, the system interfaces with online platforms such as Ubidots and the Blynk app. Users can access real-time data and control the system remotely through these interfaces, enhancing flexibility and accessibility. Overall, this research presents a practical and versatile smart home automation system leveraging IoT technology, offering enhanced convenience, safety, and energy efficiency for modern households.

KEYWORDS: Smart Home automation, IoT, Sensors, Ubidots, Blynk App, Nodemcu, Gas, DTH11, LDR, Arduino IDE,

I.INTRODUCTION

The Internet of Things (IoT) is becoming more and more integrated into daily life in a time of fast technological growth. An important use case for IoT is smart home automation, which provides homeowners with more efficiency, convenience, and security. Our project, "Smart Home Automation System Using Internet of Things," aims to develop a comprehensive and intelligent home automation solution utilizing IoT technology. A wide range of sensors are used in this project, such as the LDR sensor for light detection, the ultrasonic sensor for gate automation, the gas sensor for detecting hazardous chemicals, the IR sensor for object detection, and the DTH11 sensor for temperature and humidity monitoring. These sensors provide real-time data on several environmental characteristics and occurrences within the home, acting as the system's inputs. Our system uses a variety of output devices, such as a fan to regulate temperature, a servo motor to operate the gate, lights to control lighting, and a buzzer to notify when a gas is detected. These outputs are dynamically changed in response to changing environmental conditions and efficient resource management via the inputs from the sensors. The integration of the NodeMCU ESP8266 Wi-Fi module and relay module, which allows for effortless Internet-based control and communication over the connected devices, is essential to the operation of our smart home automation system. An additional degree of accessibility and convenience is provided by user-friendly platforms for remote system management and monitoring offered by internet interfaces like Ubidots and the Blynk app. Through the implementation of this project, we hope to demonstrate the viability and benefits of IoT-enabled home automation systems in improving living standards, enabling energy saving, and ensuring safety and security in residential settings. By using the potential of IoT, this approach enables a look into the future of intelligent and networked homes, where technology collaborates to simplify and enrich everyday activities.

II.OBJECTIVES

Our project aims to make homes smarter by using various sensors and devices connected through the Internet of Things (IoT). We use sensors like DTH 11, LDR, ultrasonic, gas, and IR sensors to detect different things like temperature, light, objects, gas leaks, and movement. These sensors trigger actions like turning on lights, and fans or sounding alarms through devices like bulbs, fans, and buzzers. We control and monitor these actions using online platforms like Ubidots and Blynk app. For example, if someone approaches the gate, it automatically opens using the ultrasonic sensor. If it's dark and someone enters the room, the lights turn on thanks to the IR sensor. If the gas sensor detects a leak, it activates the buzzer for safety. Additionally, if the temperature and humidity reach uncomfortable levels, the fan turns on automatically. We also display temperature and humidity data on a website using Ubidots. Overall, our project aims to make homes safer, more comfortable, and easier to manage using simple and accessible technology.

III.APPROACH

The block diagram appears to depict a smart home automation system using IoT (Internet of Things) technology. The various components such as the Ultrasonic Gas Sensor, Buzzer, Servo Motor, IR Sensor, Node MCU, LDR Sensor, and Cloud platform (Ubidots) indicate a comprehensive setup for automated control and monitoring. The inclusion of components like gas sensors, motors, and various types of sensors suggests a focus on safety, security, and energy efficiency within the smart home. The use of IoT-enabled devices like Node MCU and the integration with the Cloud platform hint at the ability to remotely monitor and control the smart home system. Overall, the diagram illustrates a sophisticated and interconnected smart home automation system leveraging IoT technology for enhanced functionality and control.

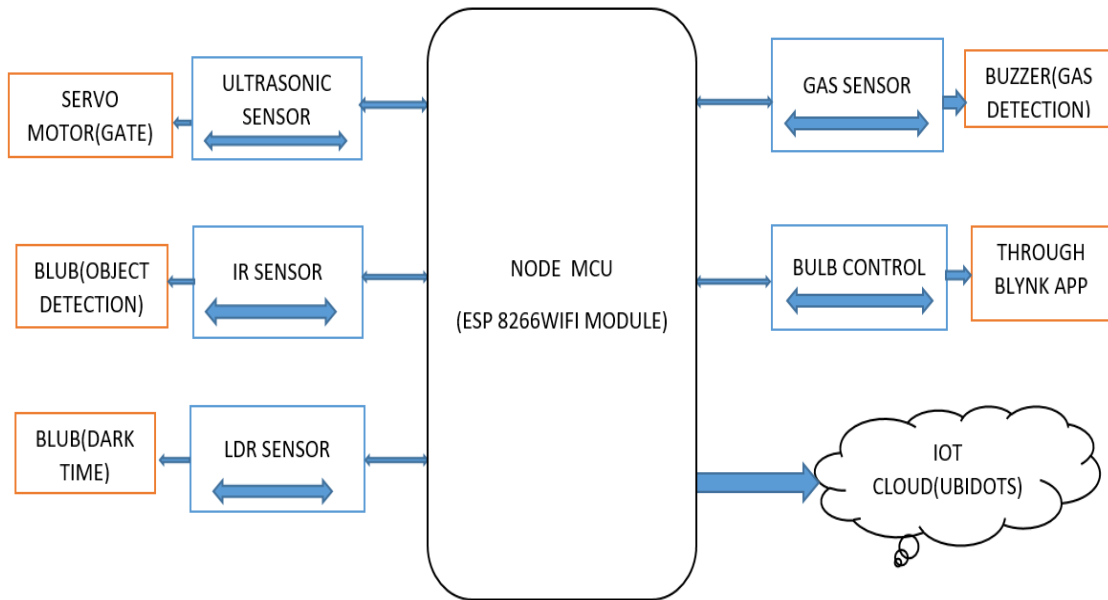


Fig 1. Block Diagram of Smart Home automation

IV.METHOD0LOGY

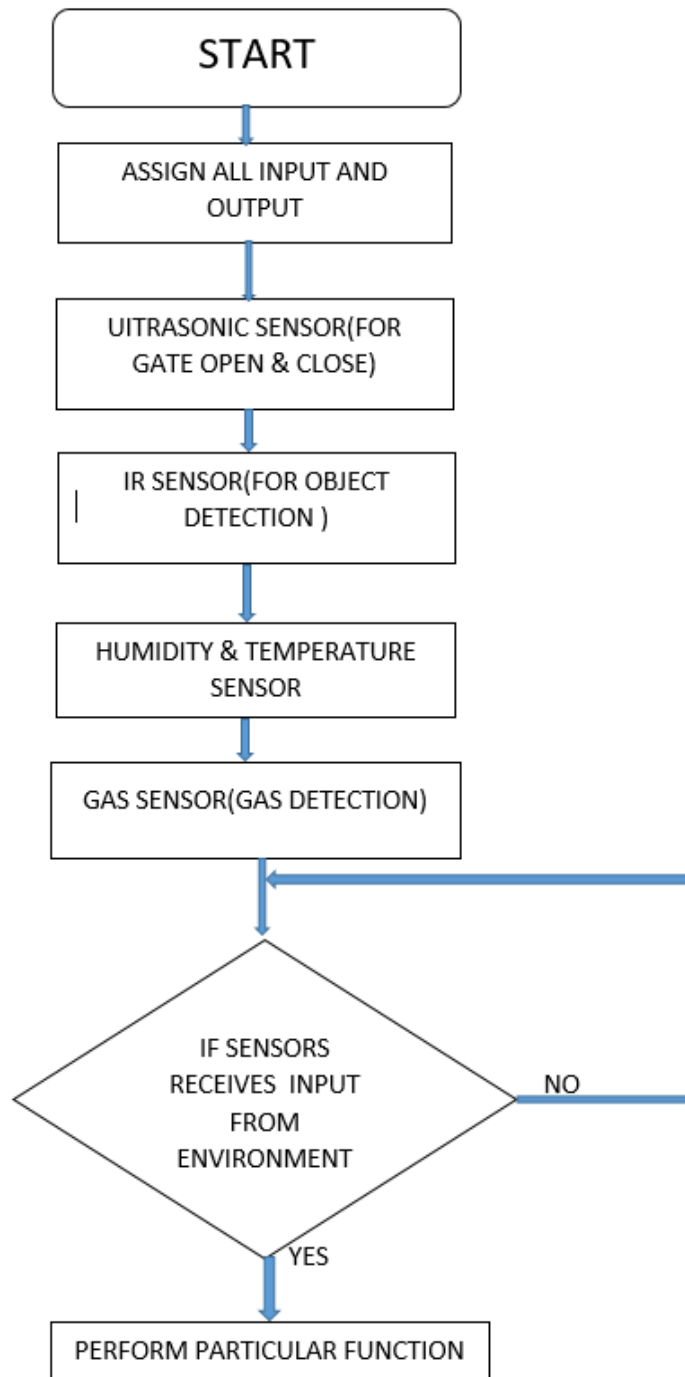


Fig 2. Working Methodology Of Model

V. RESULT AND DISCUSSION

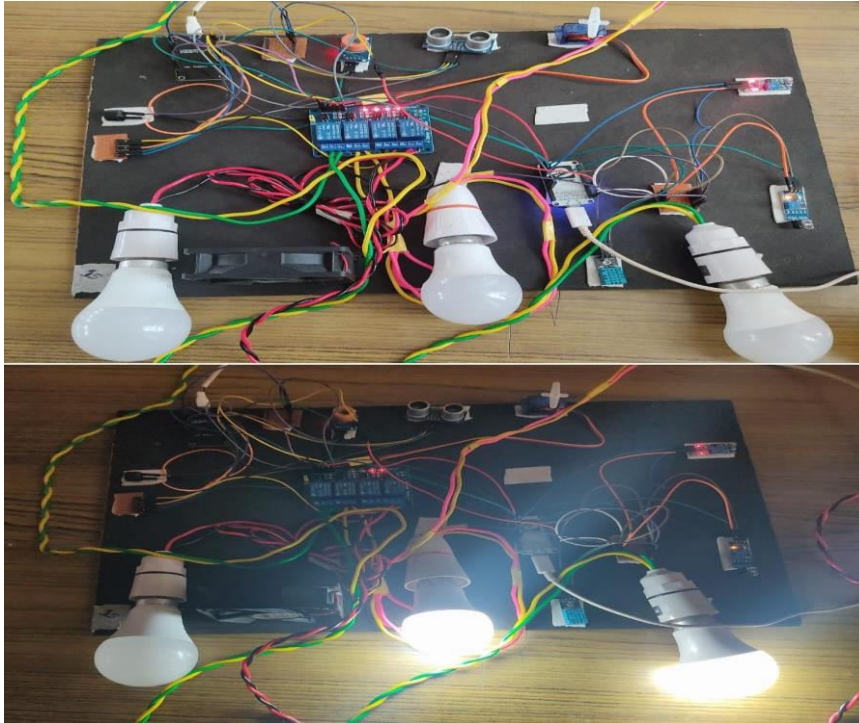


Fig 3: Model(Smart Home Automation)

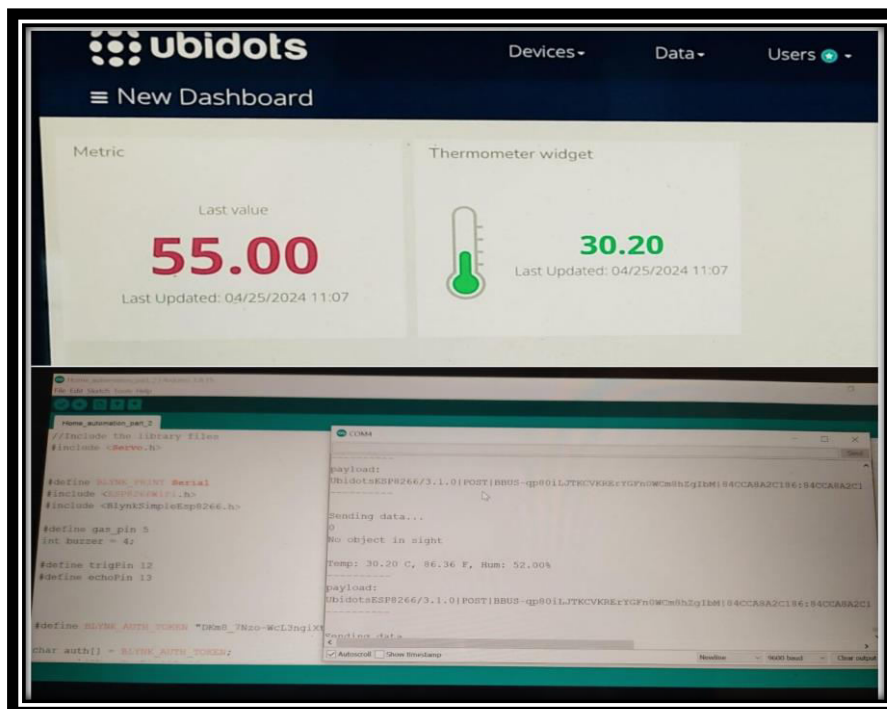


Fig 4: Ubidots & Arduino Ide Results

VI. CONCLUSION

In conclusion, our smart home automation system utilizing Internet of Things (IoT) technology showcases the potential of interconnected devices to enhance convenience, and safety in household management. Through a combination of various sensors. By leveraging components like the Node MCU ESP8266 and relay module, we've enabled seamless communication between the physical devices and online interfaces such as Ubidots and the Blink app, offering users real-time monitoring and control capabilities. The system's functionalities range from automatic gate opening based on ultrasonic sensor data, to object detection triggering room lighting, and gas detection activating a warning buzzer for safety. Moreover, temperature and humidity regulation through fan activation further enhances comfort and energy efficiency. Through Ubidots, users can conveniently access temperature and humidity data remotely via a website interface.

REFERENCES

- [1] D. Pavithra and R. Balakrishnan, "IoT-based monitoring and control system for home automation," Global Conference on Communication Technologies (GCCT), Thuckalay, 2015, pp. 169-173.
- [2] Arduino IDE, [Online]. Available: <https://www.arduino.cc>
- [3] Smith, J., & Johnson, A. (2020). "Smart Home Automation: Enhancing Comfort, Convenience, and Security." International Journal of Smart Home Automation, 5(2), 78-92.
- [4] Abhijeet, U. S., et al. "Home automation using Internet of Things." In 2018 International Conference on Smart Systems and Inventive Technology (ICSSIT), pp. 1144-1147. IEEE, 2018.
- [5] Anggorojati, Bayu, et al. "Smart home implementation using android smartphone." In 2013 International Conference on ICT For Smart Society (ICISS), pp. 29-34. IEEE, 2013.
- [6] J. M. Leger, "Smart Sensors," in Wiley Encyclopedia of Electrical and Electronics Engineering, John Wiley & Sons, Inc., 2016.
- [7] M. O. O'Connell, "Sensors for Industrial Applications," in Handbook of Solid State Chemical Sensors: Principles, Processing, and Applications, Springer, 2022



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 9940 572 462  6381 907 438  ijircce@gmail.com



www.ijircce.com

Scan to save the contact details