IoT Based Smart Home Device Control

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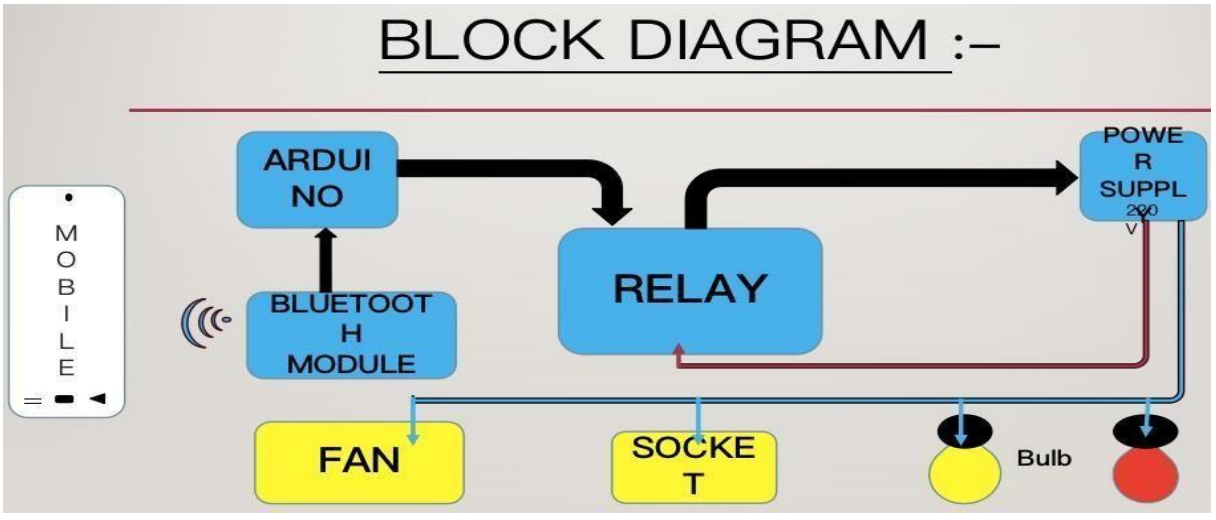
Abstract

This paper presents a cost-effective, Bluetooth- enabled IoT home robotization system using an Arduino Nano microcontroller. The system facilitates remote control of electrical bias through a mobile operation, enhancing stoner convenience, safety, and energy effectiveness. Integrated detectors and relays automate routine tasks, similar as playing music when a baby cries. The proposed system demonstrates significant eventuality in perfecting quality of life and reducing energy consumption, making it a feasible result for ultramodern smart homes.

1. Introduction

Smart home robotization integrates IoT technologies to give centralized control over ménage appliances. These systems ameliorate energy effectiveness, enhance security, and elevate stoner comfort. Our design focuses on affordable perpetration, using Bluetooth communication and a mobile app to control the bias wirelessly.

2. System Architecture



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2.1 Hardware

- Arduino Nano: Microcontroller to process and execute user commands.
- Bluetooth Module (HC-05): Wireless data event.
- Relay Module: Controls high-power bias.
- LED/Lamps: Output bias.
- Power Supply: Converts AC to regulated DC affair.

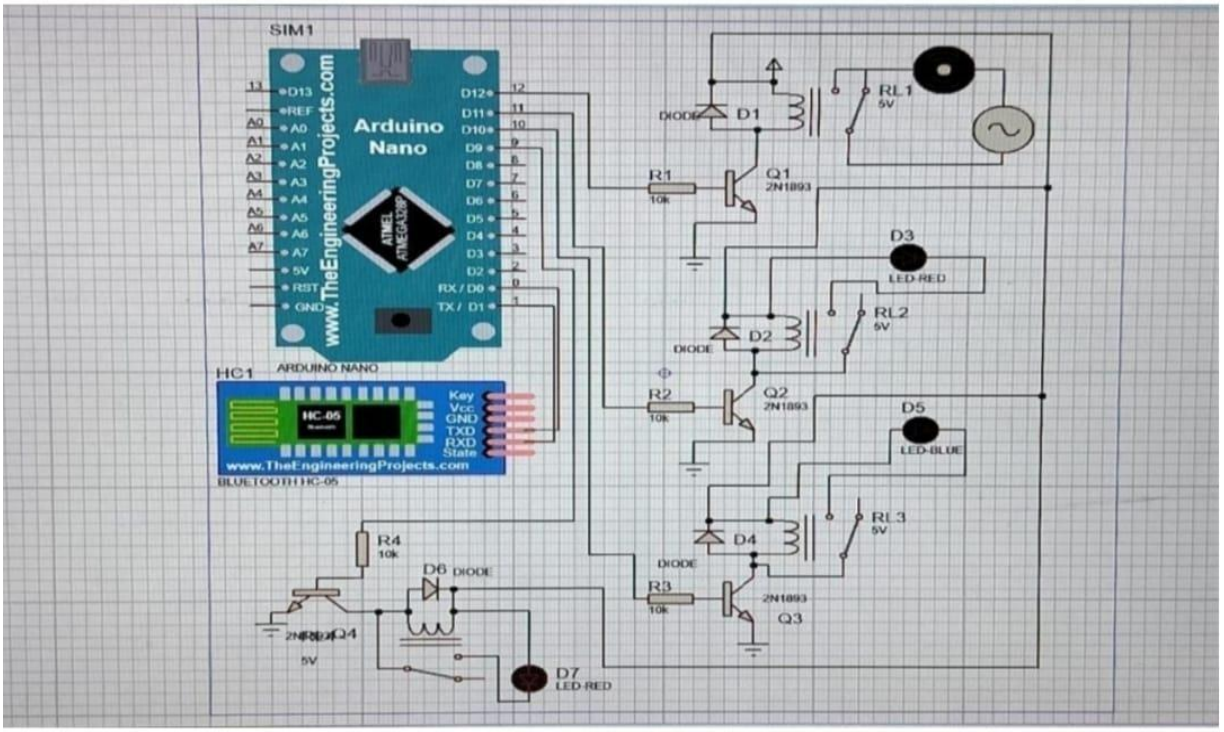
2.2 Software

- Arduino IDE with C/C++ code.
- Mobile App: Stoner interface for sending ON/OFF commands via Bluetooth.

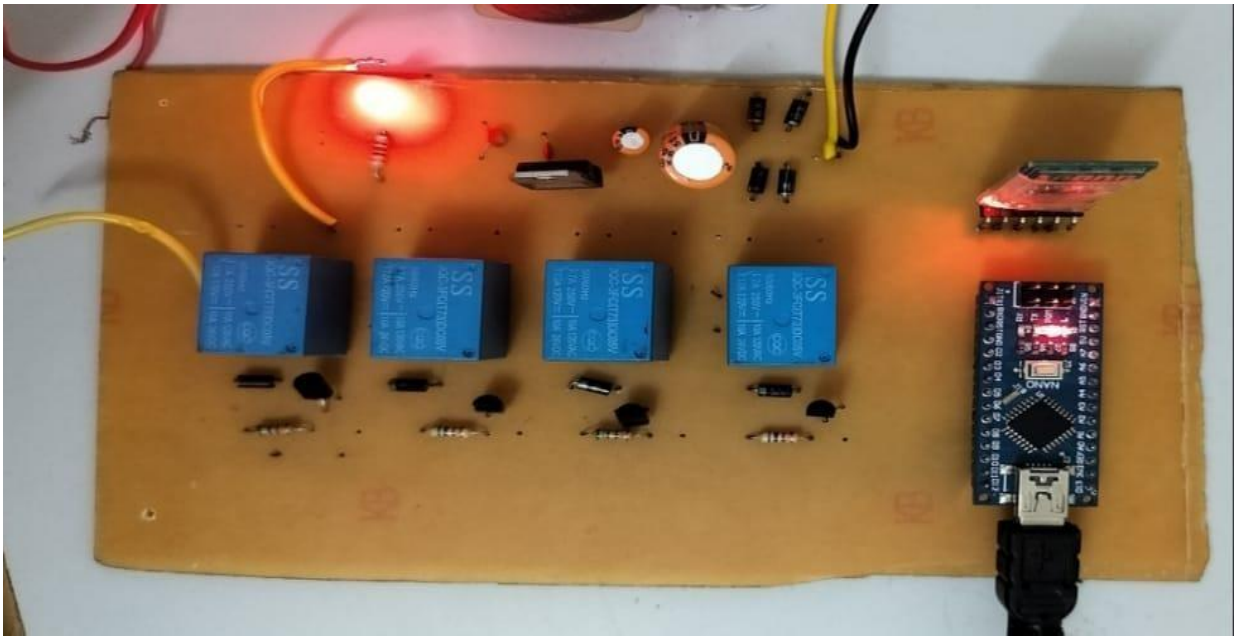
2.3 Operation Flow

1. User sends a command via the mobile app.
2. Bluetooth module transmits to Arduino.
3. Arduino interprets and triggers the relay.
4. Devices turn ON/OFF consequently.
5. Detectors cover environmental inputs for robotization.

3. Methodology



4. Results and Discussion



Experimental Setup: Demonstrated successful control manage devices via mobile commands.

Energy Savings: Estimated 5-22% reduction in mileage bills.

Trustability: Low-cost and robust design enables real-time, continued.

5. Conclusion

The developed system offers a low-cost, efficient home automation solution. Through Bluetooth communication and real-time control, users can manage home appliances effectively. This scalable solution IoT-Based Smart Home Device Control System Using Arduino and Bluetooth is ideal for energy-conscious and convenience-driven homes.

6. Conflict of Interest

The authors declare that they have no conflict of interest.

7. Funding Declaration

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

8. References

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9. **Future Work**

- Implement power-saving sleep mode for idle countries.

-Upgrade to pall-grounded control for broader IoT integration

About Author

Mr. Vaibhav Baliram Gaikwad is currently pursuing a bachelor's degree in Electronics and Telecommunication Engineering at Dr. Babasaheb Ambedkar Technological University. His academic and research interests include automation, Microcontroller (Arduino, Raspberry Pi), real- world environmental and agricultural challenges.

Vaibhav has hands-on experience in C programming and is skilled in Arduino IDE, Proteus, Audacity for project implementation. Recent work focuses on controlling the devices using IoT in a single mobile application, it also highlights smart home automation. This project is a demonstration of this approach aiming to reduce the work load and controlling the home or office devices through mobile in all over the country with the help of ESP-32 Module.