Retraction

Retraction: Bluetooth Based Home Automation and Security System (J. Phys.: Conf. Ser. 1916 012106)

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This article (and all articles in the proceedings volume relating to the same conference) has been retracted by IOP Publishing following an extensive investigation in line with the COPE guidelines. This investigation has uncovered evidence of systematic manipulation of the publication process and considerable citation manipulation.

IOP Publishing respectfully requests that readers consider all work within this volume potentially unreliable, as the volume has not been through a credible peer review process.

IOP Publishing regrets that our usual quality checks did not identify these issues before publication, and have since put additional measures in place to try to prevent these issues from reoccurring. IOP Publishing wishes to credit anonymous whistleblowers and the Problematic Paper Screener [1] for bringing some of the above issues to our attention, prompting us to investigate further.

[1] Cabanac G, Labbé C and Magazinov A 2021 arXiv:2107.06751v1

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Bluetooth Based Home Automation and Security System

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Abstract. In this paper, we have made a home robotization and security framework that will be extremely useful for the old matured individuals and truly tested individuals. For security reasons, we have also added a fingerprint scanner app to get access for the automation system. The possibility of this venture is to control home apparatuses by evading the threats of electric stun and make an agreeable life. And one of the prime ideas of this project is to eradicate the idea of ‘There is nothing without internet’ by replacing Internet with Bluetooth as the transmission medium.

Keywords: Bluetooth, home automation, fingerprint scanner, security

1. Introduction

Today we are living in 21st century where mechanization is assuming significant part in human existence. Home robotization permits us to control domestic devices. Smartphones play a major role in this. Significant advancement can be seen in the field of consumer electronics [1]. People of all age categories have the knowledge about the smartphones and the basic apps in it. The concept of home automation system can improve the traditional living standing of homes [2]. The objective is to provide a luxurious lifestyle to the old aged & physically challenged people. By utilizing this framework, our home mechanization works adroitly by giving expanded personal satisfaction, and solaces to clients. The utilization of Bluetooth innovation in an advanced mobile phone today isn’t only for the exchange of information and documents as it were. Bluetooth technology is used as one of the applications of home automation System [3]. Bluetooth innovation can work at 2.4GHz recurrence, which likewise can connect gadgets inside 10-100m territory at 3Mbps speed. [4] Its shows that Bluetooth can be more than being an ordinary information transmission medium. It assumes an indispensable part in connecting the versatile application with the microcontroller ATmega328P which is this present framework’s heart. It collects the input data from the user and pass it to the relay module which takes control of the ON/OFF operations of the appliances. And we’ve also designed the fingerprint scanner app very simple so that the people of any age category can understand the home automation process very easily. The fingerprint lock is accessible only by the recognised fingerprints of the user.

2. Literature survey

Internet connections have become one of the basic needs in life. Nowadays, we cannot see a person without smartphone. One of the main challenges we faced while designing this system is designing this system without using IoT.[5] We were very certain that Bluetooth should be the only transmission link between the sender and receiver. We were also very certain that the fingerprint app should be so simple. The Bluetooth module can act as both slave and master. This whole setup costs just few
thousand rupees, thus making it the cheapest and most efficient home automation system. “Bluetooth based home automation system (2002)” depicts a use of Bluetooth innovation in home computerization and a systems administration climate. It proposes an organization containing a far off and versatile host regulator and a few customer modules (home machines). [6] The communication between the client modules and the host controller is achieved with the help of Bluetooth devices. Android Based Home Automation System Using Bluetooth & Voice Command (2016) is about home automation system where a smartphone is used to enable any naive user to operate all the appliances. [7,8] It can also support voice command for naive users with command sensing by decoding the user’s voice command and extracting the exact meaning of his command. Anand Kishore Azad’s “IOT Based Home Automation Using Bluetooth with Security Enhancement (2019)” presents how to implement the effective Home Automation System with IOT and device. [9-11] The concept of home automation system can improve the traditional living standard of homes. The basic framework utilizes a remote Bluetooth gadget giving a remote admittance to Smart telephones [12-15].

3. Comparison with Existing Methods
This proposed system helps to achieve providing comfortable life to people of all age categories by the use of Bluetooth module HC-05, Microcontroller ATmega328P and Relay module along with the fingerprint scanner app. Home automation based methods have mostly employed IoT as their primary data transmission medium. They failed to consider the home automation system that is applicable to people of all age categories. Home automation methods that have come earlier have proved us to be more costly. This system will be the cheapest of all is shown in Table 1.

4. Hardware Description

Table 1. Hardware components

| S.NO | NAME OF THE COMPONENT | DESCRIPTION |
|------|----------------------|-------------|
| 1.   | Bluetooth Module HC-05 |             |
| 2.   | Microcontroller ATmega328P |             |
| 3.   | Relay Module         |             |
| 4.   | Mosfet Driver & locker with Solenoid Latch |             |

A. Bluetooth Module HC-05

Bluetooth Module HC-05 is a sequential Bluetooth module for Arduino and other microcontrollers. It can work in Slave, Master or Master/Slave mode. It very well may be interfaced with Laptop/Mobile telephones without any problem. Its reach is <100m is shown in Figure 1.

Figure 1. Bluetooth Module HC-05
B. Microcontroller ATmega 328p

The ATmega328P has an adjusted Harvard engineering with 8-cycle RISC processor center. Its exhibition is high and additionally has low force regulator from Microchip. It is the most mainstream of all AVR regulators as it is utilized in ARDUINO sheets. It has program memory of 32 bytes and it has numerous applications. It can likewise chip away at Mobile Embedded Systems with a few force saver modes is shown in Figure 2.

![Microcontroller ATmega 328p](image)

**Figure 2.** Microcontroller ATmega 328p

C. Relay Module

The 4 Channel Relay Module is an advantageous board utilized for controlling high voltage, high current burden like engine, lights, solenoid valves and AC load. It is intended to interface with microcontrollers like, PIC, Arduino, and so on. Screw terminal is carried out alongside the Relay’s terminal. It likewise accompanies a LED to show the transfer’s status. It ships 5V transfer as a matter of course is shown in Figure 3.

![Relay Module](image)

**Figure 3.** Relay Module

D. Mosfet Driver

A MOSFET driver is a force speaker that acknowledges a low-power contribution from an IC regulator and produces a high-flow drive contribution for the door of a powerful semiconductor like an Insulated-Gate Bipolar Transistor (IGBT) or force MOSFET. MOSFETs are tri-terminal, unipolar, can be constrained by voltage and has high info impedance gadgets which structure a fundamental piece of electronic circuits is shown in Figure 4.
E. Locker with Solenoid Latch

This Solenoid Latch comes with a mounting bracket that can be removed with the help of two screws. The Solenoid can be rotated 180° and remounted once it is removed. On paired with a relay you can have a low voltage system control this & other devices of higher voltage is shown in Figure 5.

5. Block Diagram of the Proposed Methodology

The proposed system functions as a remote controller for the electronic appliances that we’ve paired this system with. When the user unlocks the app using his/her fingerprint the app will ask for connection to the Bluetooth devices. On touching that it’ll look for the device and gets paired with it. Then they can ON/OFF the appliances using the options available below. The Microcontroller gets the ON value as ‘1’ and OFF value as ‘0’. Then it’ll send the signal received to the Relay module which will take care of the remaining functions is shown in Figure 6.
6. Flowchart

The proposed project is explained with the help of flowchart and figure 7, which shows the flow chart. When a Bluetooth fingerprint app is opened we have to place our fingers on the fingerprint scanner. If it is a recognized fingerprint, the app will give access for further proceedings. If not it will revert back again to fingerprint scanning operation. Then if we press the switches ON/OFF available for corresponding appliances, it will send the corresponding bytes to HC-05.

![Flowchart of the Proposed Architecture](image)

**Figure 7.** Flowchart of the Proposed Architecture

7. Result

The simulation of the proposed work is simulated and verified for results. After verification of results, it was implemented and tested for hardware results. The proposed ‘Bluetooth Based Home Automation and Security System’ works excellently is shown in Figures 8 and 9.

![Representation of the software simulation](image)

**Figure 8.** Representation of the software simulation
8. Conclusion
This low-cost program is intended to increase the quality of life in at home. The function of the remote control in ARM9 provides assistance, especially for the disabled and the elder people. To provide security for the user, a low power consumption switch has been changed to current power switch. In addition, Bluetooth wireless is launched communication to the control board allows simple installation of the system. The control board is mounted directly next to the electrical switch which changes the connection and is controlled by transmission. In addition, flexible forms of connection are designed for backup connection to system. Connected GUIs aligned with the control board. See show real-time status change. The system is built on an easy-to-use interface. The GUI provides informal control with old and disabled people. For the future work, Window GUI will be used by voice control through speech recognition. The GUI is used as remote Bluetooth microphone Windows GUI. Voice signal input in ARM9 is transferred to Window GUI processing signals. The pressure buttons are made with low power of switches which will replace capacitive sensor switching. The future work is expected without spending any additional cost.

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