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COLLEGE OF ENGINEERING
NAAC Accredited Autonomous Institution
Approved by AICTE & Affiliated to Anna University
ISO 9001:2015 & ISO 14001:2015 Certified Institution
Thalavapalayam, Karur – 639 113.



SHOCKLESS TOUCH AUTOMATION

A MINOR PROJECT-IV REPORT

Submitted by

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BACHELOR OF ENGINEERING

in

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

M.KUMARASAMY COLLEGE OF ENGINEERING

(Autonomous)

KARUR – 639 113

MAY 2022

M.KUMARASAMY COLLEGE OF ENGINEERING, KARUR

BONAFIDE CERTIFICATE

Certified that this project report “**SHOCKLESS TOUCH AUTOMATION**” is the bonafide work of “**SATHEESHKUMAR N (19BEC4185),SATHISHKUMAR S B (19BEC4188), SRIPATH R (19BEC4206),VISHNURAM T (19BEC4236)**” who carried out the project work under my supervision in the academic year 2021-2022.

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This Minor project-IV report has been submitted for the **18ECP106L – Minor Project-IV**

Review held at M.Kumarasamy College of Engineering, Karur on_____.

PROJECT COORDINATOR

Vision of the Institution

To emerge as a leader among the top institutions in the field of technical education

Mission of the Institution

M1: Produce smart technocrats with empirical knowledge who can surmount the global challenges

M2: Create a diverse, fully engaged, learner-centric campus environment to provide quality education to the students

M3: Maintain mutually beneficial partnerships with our alumni, industry, and Professional associations
Vision of the Department

Vision of the Department

To empower the Electronics and Communication Engineering students with emerging technologies, professionalism, innovative research, and social responsibility.

Mission of the Department

M1: Attain the academic excellence through innovative teaching learning process, research areas & laboratories and Consultancy projects.

M2: Inculcate the students in problem solving and lifelong learning ability.

M3: Provide entrepreneurial skills and leadership qualities.

M4: Render the technical knowledge and skills of faculty members.

Program Educational Objectives (PEOs):

PEO1: Core Competence: Graduates will have a successful career in academia or industry associated with Electronics and Communication Engineering.

PEO2: Professionalism: Graduates will provide feasible solutions for the challenging problems through comprehensive research and innovation in the allied areas of Electronics and Communication Engineering.

PEO3: Lifelong Learning: Graduates will contribute to the social needs through lifelong learning, practicing professional ethics and leadership quality

Program Outcome (PO):

PO 1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice.

PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcome(PSO):

PSO1: Applying knowledge in various areas, like Electronics, Communications, Signal processing, VLSI, Embedded systems etc., in the design and implementation of Engineering application.

PSO2: Able to solve complex problems in Electronics and Communication Engineering with analytical and managerial skills either independently or in team using latest hardware and software tools to fulfil the industrial expectations.

Abstract	Matching with POs, PSOs
LED, Relay, Transformer	PO1,PO2,PO3,PO4,PO5, PO6,PO7,PO8,PO9,P010, PO11,PO12,PSO1,PSO2

ABSTRACT

In recent years, the home environment has project focuses on assisting the users to control as well as to know the exact status of electric appliances in their home at that instant by using GSM and Zig-Bee which is wireless communication. Previously home automation is very complicated on hardware. Thus, it is difficult to maintain Factors like security, reliability, usefulness, robustness, and price. Now a days it consists of touchscreen which easy to use. Now that human and computer interaction has been developed into a wider and more sophisticated field., designing and operating of intelligence system has been more user friendly than ever. Home automation is a system that helps a user to operate switching various appliances and lighting devices from a single input. The touch screen used as input is much simpler to operate. Touch screen has been widely accepted as the most comfortable input to be provided to the user. Not only they are easy to operate but they also give a sense of personal involvement which the user always appreciates.

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LIST OF ABBREVIATIONS

Fig.No	ABBREVIATION	EXPANSION
1	SMPS	Switched Mode Power Supply

1. INTRODUCTION

Android Based Smart door locking system is designed to prevent unauthorized access, trespassing and intrusion. Banks, corporate offices, financial organization, jewellery shops, and government organization are some of the common targets where unauthorized access, trespassing and intrusion take place. Normally the aim behind such activities is stealing money, jewels or any important documents for individual gain. The purpose of Android Based Smart door locking system is to provide a smart solution to overcome these challenges and provide a feasible solution.

This system works on pre- decided password concept. It increases the security level to prevent an unauthorized unlocking done by attacker. In case the user forgets the passwords, system gives the flexibility to the user to change or reset the password. This automatic password-based lock system gives user more secure way of locking-unlocking the system.

With the advancement in technology Smart door locking system have become more advanced. The android based smart door lock system here is basically designed for normal mode and multi-mode operations. Such system is very much required in Bank and Business organization. The system also gives functionalities for general user, where single user is authorized to operate the lock. The cost-effective implementation with advanced functionality and easy to use interface makes the system.

1.1 BACKGROUND

A touch sensor is a type of device that captures and records physical touch or embrace on a device and/or object. It enables a device or object to detect touch or near proximity, typically by a human user or operator. Touch sensing input devices offer numerous possibilities for novel interaction techniques, and it reliably replaces mechanical buttons and switches to eliminate mechanical wear and tear. These can be configured into simple sliders, rotary wheels, or touch pads for intuitive user interfaces.

1.2 PROBLEM STATEMENT

Automation is a field that is relevant to all streams of Engineering. It is however closely related to the discipline of Electrical Engineering because the logic that is achieved by the Programmable Logic Controller(PLC) programming today, was first done using Electrical Wiring

1.3 OBJECTIVE

The purpose of Android Based Smart door locking system is to provide a smart solution to overcome these challenges and provide a feasible solution. This system works on pre- decided password concept. It increases the security level to prevent an unauthorized unlocking done in this method, all data are controlling by Bluetooth android application in that app we are sending the data through Bluetooth to control the home door lock one is open and another one close form the application

2. LITERATURE REVIEW

The system works using keypad to enter a password to the system. If entered password is correct then door is open by motor which is used to rotate the handle of the door lock. System also includes extra features like adding new users and changing old password etc. We surveyed many smart doors locking system. We found that these products are very expensive. Some of the implementation mentioned in the literature survey is very cost effective in implementation but do not provide multi user or multilevel functionalities. We identified these requirements and thought to develop a system which is cost effective in implementation and having more advanced features like multiuser and multilevel. These features are the need of time and such functionalities will make the system more useful. Automatic door system has become a standard feature on many different types of buildings and homes. And they are becoming popular everyday to develop effective electronic devices which provide security. Home security has been a major issue because of the increase in crime rate and everybody wants to take proper action to prevent unauthorized user.

3. METHODOLOGY

A touch sensor detects touch or near proximity without relying on physical contact. Touch sensors are making their way into many applications like mobile phones, remote controls, control panels, etc. Present day touch sensors can replace mechanical buttons and switches.

Touch sensors with simple rotational sliders, touch pads and rotary wheels offer significant advantages for more intuitive user interfaces. Touch sensors are more convenient and more reliable to use without moving parts. The use of touch sensors provides great freedom to the system designer and help in reducing the overall cost of the system. The overall look of the system can be more appealing and contemporary.

3.1 SIGNIFICANCE OF PROJECT

Automation is to control the industrial machinery and process with PLC and SCADA (Supervisory Control and Data Acquisition). It helps reduce the need for human intervention. It plays an increasingly vital role in the global economy and in daily experiences. Automation and control systems enable safe and efficient operation of Industrial plants by minimizing risks.

3.2 DESIGN OVERVIEW

Relay

This is called energizing of relay. When the supply is removed it retrieves back to the original position. This is called De energizing of relay. There are also such relays, whose contacts are initially closed and opened when there is supply i.e. exactly to opposite to the above shown relay. Solid state relays will have sensing element to sense the input voltage and switches the output using up to coupling.

SMPS

AC-DC Converter SMPS Working: AC to DC converter SMPS In this type of SMPS, the input supply is AC, and, in the output, we get DC supply. Rectifiers and filters are used to convert this AC power to DC. This uncontrollable DC voltage is given to the affected power factor correction circuits. This is because there is a low current pulse inside the rectifier around the peak of the voltage. This includes high-frequency energy which influences to reduce the power factor. This is due to power conversion, but we have used AC input instead of DC input supply. Therefore, a combination of rectifier and filter, this block diagram is used to convert AC to DC, and switching an operation is done using a power muffle amplifier. MOSFET transistors use low resistance and can resist high currents. The switching frequency is chosen so that normal humans (above 20KHz) must be kept low, and the operation of the switch is controlled using a PWM oscillator. Again this AC voltage is given to the output of the transformer as shown in the figure or the voltage level goes down. After that, the output of this transformer is fixed and smoothed using the Output filter and corrector.

Touch Sensor

Touch sensors work like a switch. When they are subjected to touch, pressure or force they get activated and acts as a closed switch. When the pressure or contact is removed, they act as an open switch. Capacitive touch sensor contains two parallel conductors with an insulator between them. These conductors' plates act as a capacitor with a capacitance value C_0 . When these conductor plates met our fingers, our finger acts as a conductive object. Due to this, there will be an uncertain increase in the capacitance. A capacitance measuring circuit continuously measures the capacitance C_0 of the sensor. When this circuit detects a change in capacitance it generates a signal. The resistive touch sensors calculate the pressure applied on the surface to sense the touch. These sensors contain two conductive films coated with indium tin oxide, which is a good conductor of electricity, separated by a very small distance. Across the surface of the films, a constant voltage is applied. When pressure is applied to the top film, it touches the bottom film. This generates a voltage drop which is detected by a controller circuit and signal is generated thereby detecting the touch.

Transistor

The element named silicon is generally preferred for transistor construction. The silicon is less sensitive to the temperature. It has the capability of handling the high values of voltages and the greater ranges of currents. As it is known that the emitter base junction must be in forward bias, and the collector base junction remain in reverse bias. Because of the forward bias condition at the emitter base junction there is most of the carriers entered into the base. This is the reason for the constitution of the base current that tends to flow through the region of base. This current tends to flow towards the collector and in response the electron movement is observed in the collector region from base. The base current is also responsible for creation of vacancy at the collector. But it has small magnitude. As we already know that the base present in the transistor has always lightly doped.

Capacitor

A capacitor is an electronic device that is used to store electrical charge. It is one of the most important electronic devices in circuit design. A capacitor is a passive component that can store both negative and positive charges. This is the reason why it can temporarily behave as a battery. Depending upon the design, construction, size, and storage capacity of a capacitor, it can be used in a variety of applications. The property of storing charges associated with the capacitors is known as capacitance. The capacitance is defined as the ratio of electric charges accumulated across the conducting plates of the capacitor and the potential difference existing between them. The capacitance is measured in Farads, which is named after English physicist Michael Faraday.

3.2 CIRCUIT DIAGRAM

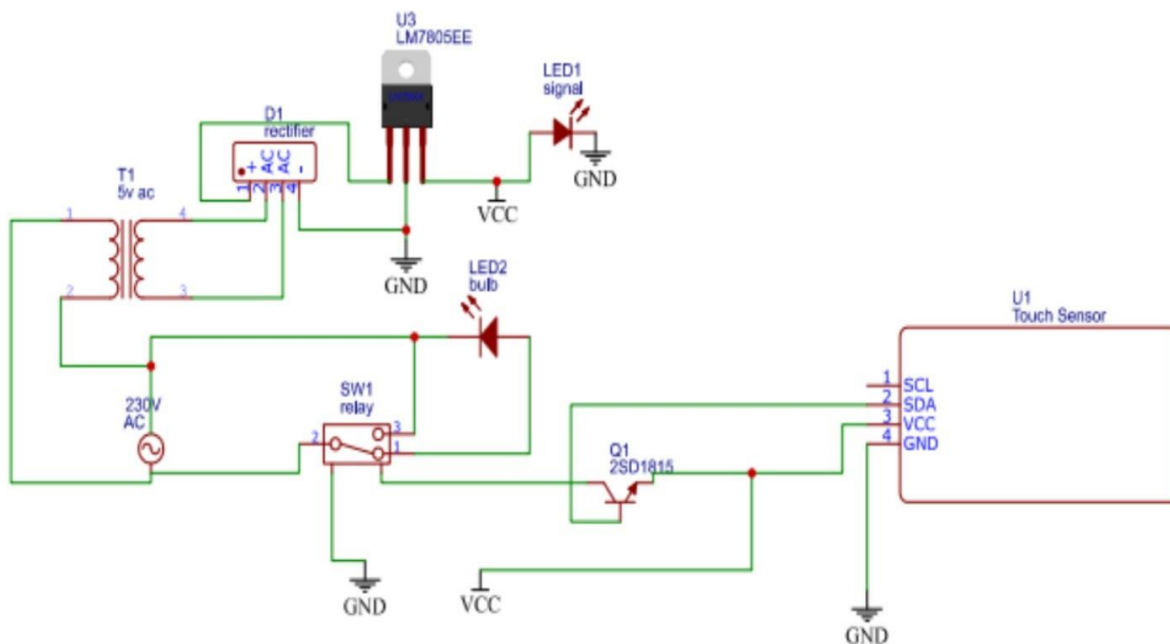


Fig No-3.1

3.3 WORKING PRINCIPLE

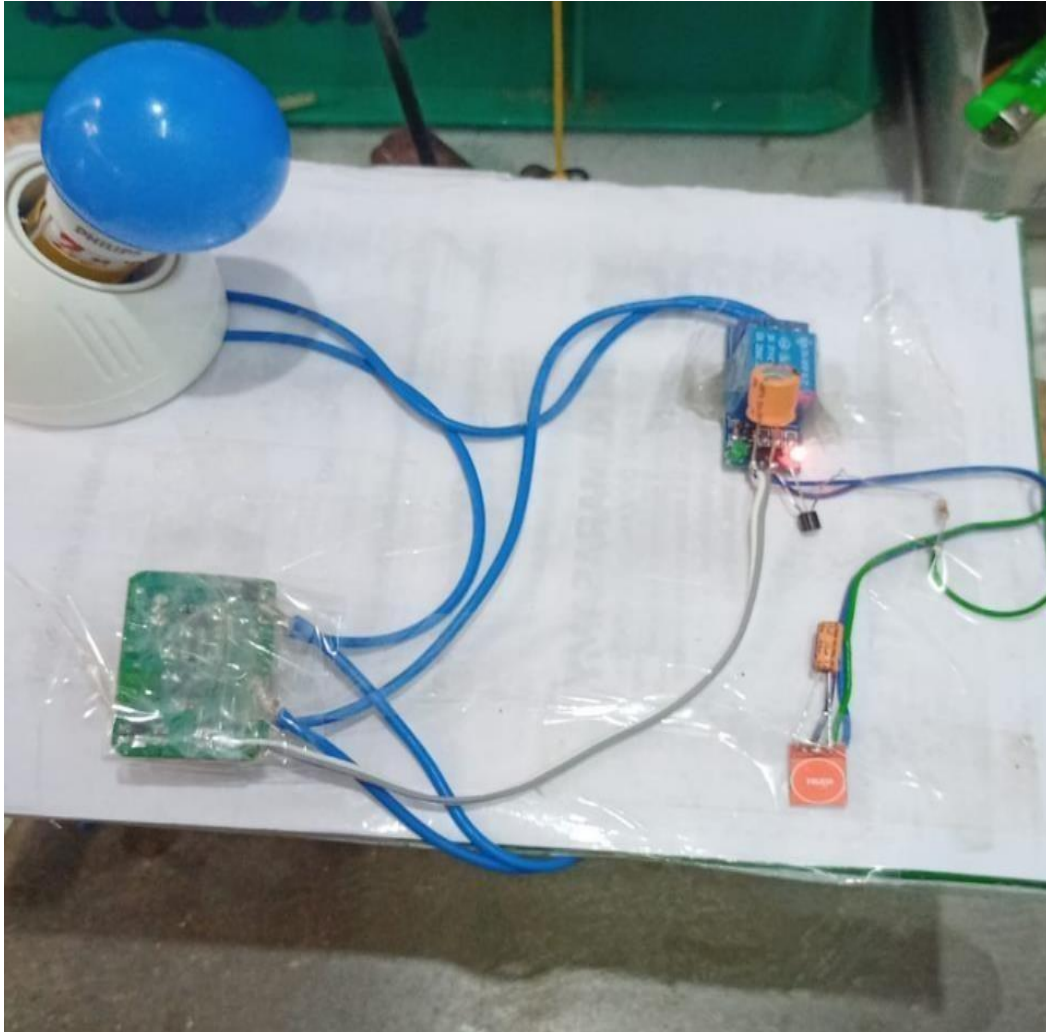


Fig no-3.2

4 FUTURE SCOPES

Automation is not just a word but a requirement of everyone in the future. Technology made it possible to control your home appliances with the help of mobile application or voice assistants.

This will be a revolution in the future to change simple homes into smart homes to make consumers more comfortable and add convenience to their life. Home automation will even help make your home secure as homeowners will be notified on their phone about any unusual activity in their smart home.

5 ADVANTAGES

- Industrial safety
- Fire safety
- Power consumption
- Shockless switch

6 DISADVANTAGES

- Power is needed

7 CONCLUSION

There have been remarkable progress in automation since its envisioning by engineers in the middle of the twentieth century; and it has come with benefits as well as challenges and limitations. Today, automation can perform very complex tasks, resulting in high volumes of quality products at low cost with minimal or no accidents. Its implementation is however encumbered by the high initial cost setting it up. Its progress is also set to economic and technological constraints.

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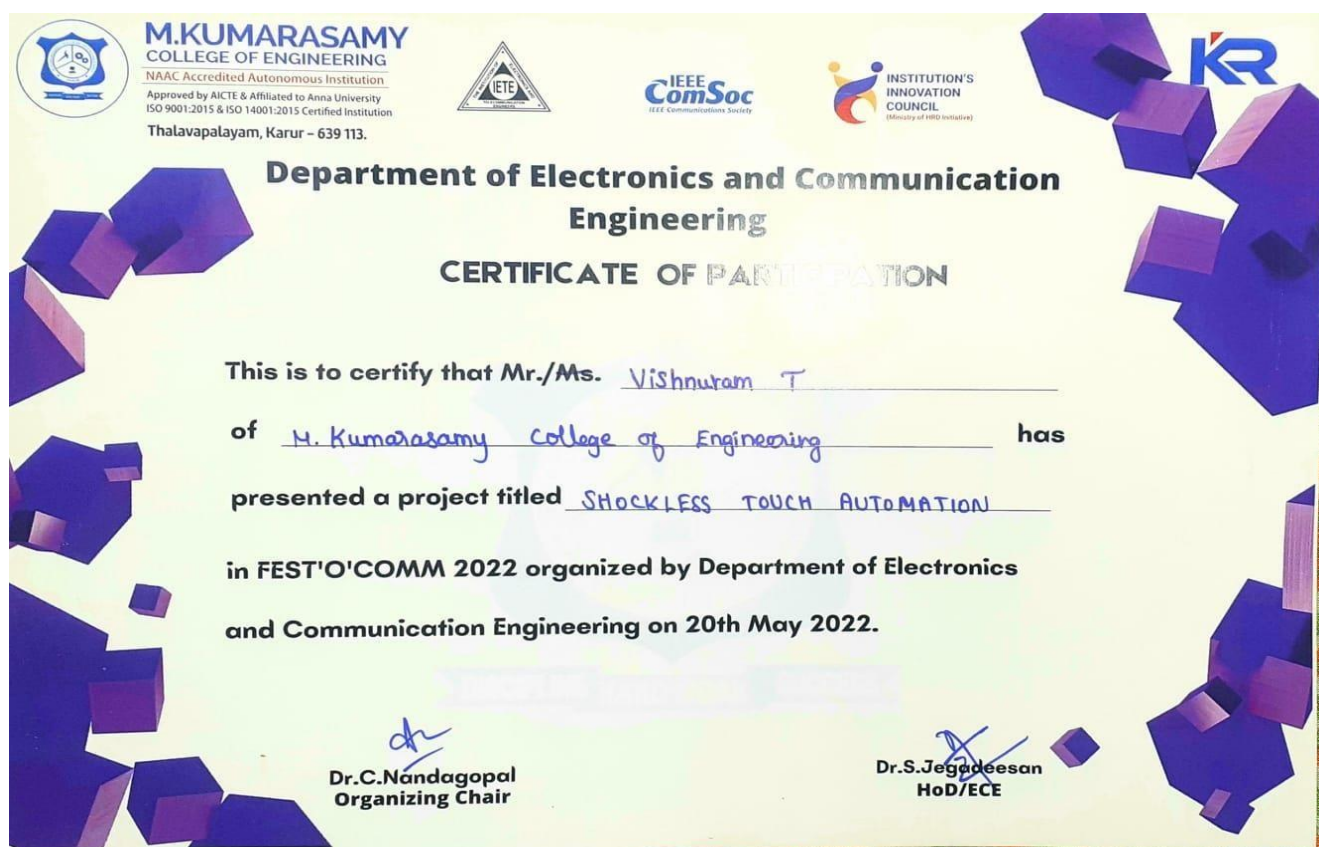
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OUTCOME

1.SATHEESHKUMAR N



2. VISHNURAM T



3.SATHISHKUMAR S B



4.SRIPATHI R



