



Optimized Door Locking and Unlocking Using IoT for Physically Challenged People

Anuradha.R.S^{#1}, Bharathi.R^{#2}, Karthika.K^{#3}, Kirithika.S^{#4}, S.Venkatasubramanian⁵

B.E. Student, Dept. of Computer Science and Engineering, Saranathan College of Engineering, Venkateshwara Nagar,
Panjapur, Trichy, Tamilnadu, India^{1,2,3,4}

Assistant Professor, Dept. of Computer Science, Saranathan College of Engineering, Venkateshwara Nagar,
Panjapur, Trichy, Tamilnadu, India⁵

ABSTRACT: The project is aimed at developing an application for the “OPTIMIZED LOCKING AND UNLOCKING A SYSTEM USING USING ARDUINO ”Smart Home Automation System playing a major role which helps in reducing a work by using some technologies. The proposed work is to send a signal to door from a Tablet or mobile devices by using wireless system. This allows the user to lock and unlock a door from inside or outside a house with a Wi-Fi range available. The ideal purpose of the work is, if the door is not locked in First floor or in any other floor, the user from ground floor they can open the door or unlock the door from mobile phone or Laptop, which makes a person to reduce its energy or save time. The major components of the system are Latest Arduino Board, Servo Motor and Wi-Fi (IEEE 802.11b/g/n) standard protocol for wireless communication which combines and forms an activity. The open source Software and Hardware with embedded device is used to give a complete task

KEYWORDS: Arduino Yun Board, DC Motor, Wi-Fi.

I. INTRODUCTION

The purpose of the project” OPTIMIZED LOCKING AND UNLOCKING A SYSTEM USING USING ARDUINO” Today, technology has become an integrated part of people's lives. It has, and continues to influence many aspects of daily life and has allowed better social interaction, ease of transportation, the ability to indulge in entertainment and media and has helped in the development in medicine. The creation of many devices such as mobile phones and computers have caused many people to rely on technology to communicate with their friends, store information such as pictures, movies, documents, and music . The internet has become a common interface that many devices use in order to simplify the daily life of many people. The Internet has given people the ability to search for information, store their own information in the cloud while also giving them better ways of managing information. From the time of its introduction, the amount of people that use mobile phones and the internet to communicate with other people has increased dramatically to become one of the major means of communication. Smartphones have allowed people to connect to the internet without the need for a computer, while still offering the same functionality but through different means. With the introduction of better hardware and better software, smartphones have become powerful devices and have become an important part of people’s daily lives. A major aspect is how the smartphone is able to connect and communicate with other devices. For example, smartphones can be used as a mouse for a computer, or it can connect to the speakers of cars allowing consumers to play their own music. There are many applications of this sort. A field that is recently gaining popularity is home automation which can also use smartphones as information or functionality hubs.

Smart Home Automation

The purpose of the system is to create convenient and easy-to-use system for users. Smart Home Automation System plays a major role in helping reduce the work by using some Technologies especially for children , old aged people and physically challenged. The proposed work is to send a signal to door from a Computer or Tablet or mobile devices by using wireless system. This allows the user to lock and unlock a door from inside or outside a house with a Wi-Fi range available. The ideal purpose of the work is, if the door is not locked in First floor or in any other floor, the user



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II. RELATED WORK

The remote door lock controller remotely unlocks a door mechanism using a wireless remote controller. Such a device is very helpful for people with limited motor abilities since it is nearly impossible for them to perform certain simple physical tasks, such as locking or unlocking a door. Tasks which most of us take for granted can prove to be extremely difficult if not impossible for those with physical disabilities[1]. Mobile devices have been integrated into our everyday life. Consequently, home automation and security are becoming increasingly prominent features on mobile devices. In this paper, we have developed a security system that interfaces with an Android mobile device. The mobile device and security system communicate via Bluetooth because a short-range-only communications system was desired[2]. Arduino is an open-source prototyping platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. Arduino Yun has wifi inbuilt USB port, Micro SD card slot, 3 reset button, an In-Circuit Serial Programming header, 16 MHz crystal Oscillator, contains 20 Digital Input/ Output Pins and 12 Analog Channels[4]. Low cost and flexible home control and monitoring system using an embedded micro-web server, with IP connectivity for accessing and controlling devices and appliances remotely using Android based Smart phone app[3]. The system called door locks automation system using Bluetooth-based Android Smartphone is proposed and prototyped. First the hardware design and software development are described, then the design of a Bluetooth-based Smartphone application for lock/unlock the door are presented. The hardware design for door-lock system is the combination of android smart phone as the task master, Bluetooth module as command agent, Arduino microcontroller as controller center / data processing center, and solenoid as door lock output[5].

III. PROPOSED SYSTEM

The wireless LAN module fixed on the board receives the transmitted signal and transmits to the microcontroller. The microcontroller passes the data to the servo motor in order to perform the operations on the Door. The working principles and design of a full system is shown in our proposed work. This proposed work system of design consists of three major components. They are Arduino Yun Board, Servo Motor and Android Apps.

Optimized door locking and unlocking using arduino has modules like

- Controlling dc motor using arduino
- Developing android app
- Pairing with a device

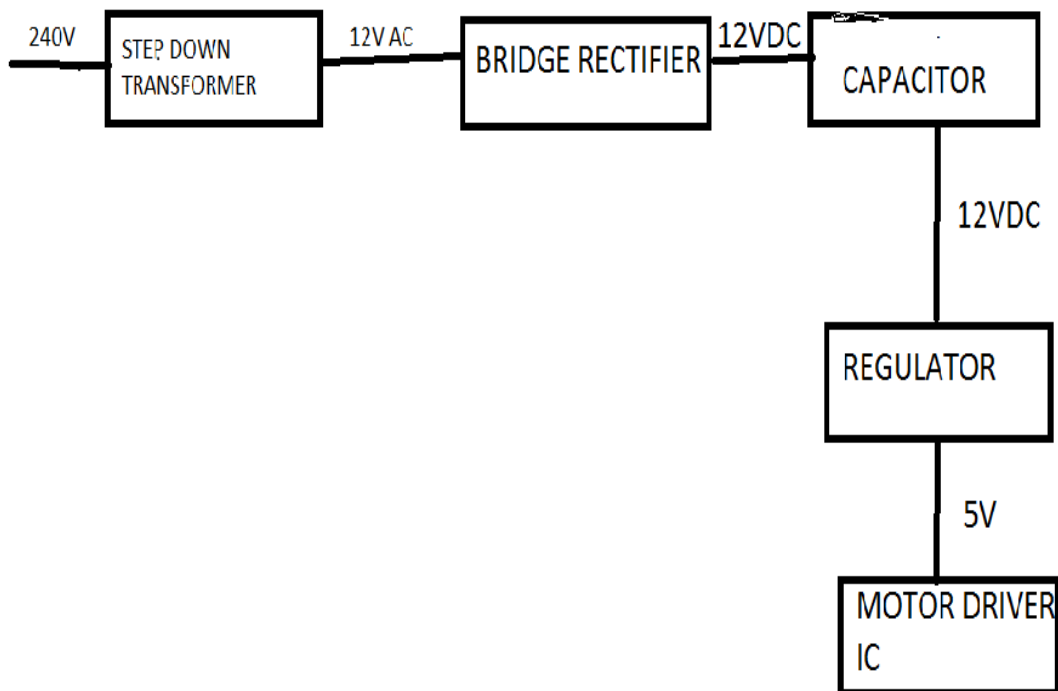
A. controlling dc motor using arduino:

DC Motor converts electric energy into mechanical energy. A DC Motor uses direct current - in other words, the direction of current flows in one direction. Small DC motors are used in tools, toys, and appliances

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B. Developing android app:

In this module we develop the android app which contains two toggle button on and off. if the user presses lock button the door is locked and if the user presses unlock button in the app the door is unlocked.

C. Pairing with a device

In this module is used to interface between the smartphones with the Aurdino board. the user can turn on the Wifi, search the wifi device if it is got the user paired with the Aurdino board and smart phones

IV. SYSTEM ARCHITECTURE

The user presses the lock and unlock button in the android app then it locks the door and the user presses the unlock button it unlock the door

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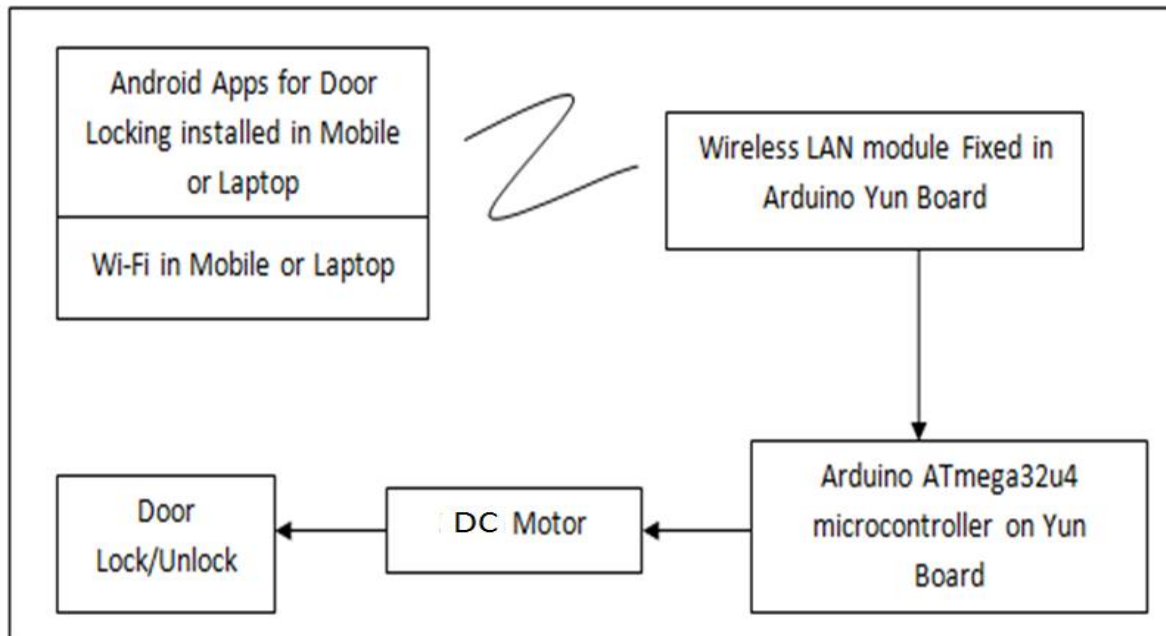
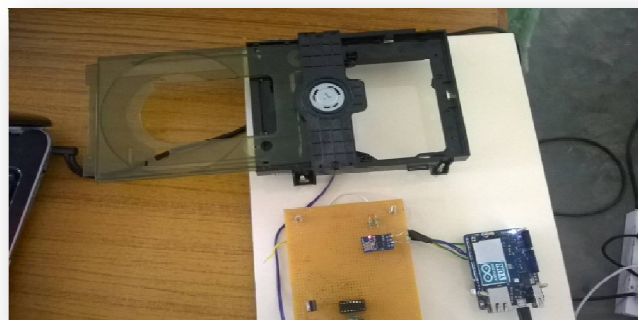


Fig1.System Architecture

V. RESULT AND OUTCOME

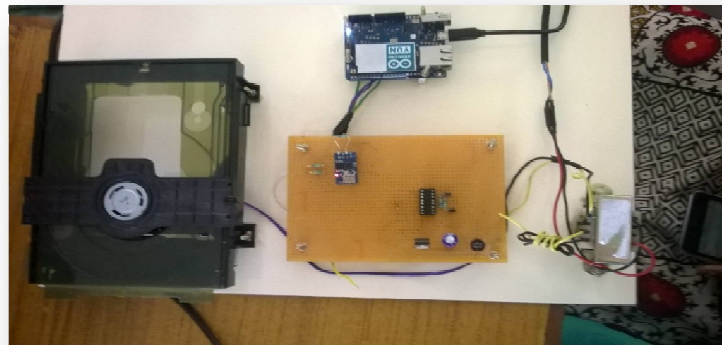
The result is that the door is locked and unlocked the door.



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VI. CONCLUSION AND FUTURE WORK

The end result of this project is ended up successfully with both unlock and lock capability of door by an android application and also by an Arduino Yun Board. The Wi-Fi allows the user to interact with the Board from longer rangewhen compared to Bluetooth. The major advantage here is the usage of an Arduino Yun Board which is in underresearch for future purpose by many scholars. Further the overall system is more attractive which allows us to interactwith the environment. In Future, this Arduino Yun project is further enhanced with GPRS for performing Locking and Unlocking operations from any locations.

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