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FINGERPRINT VEHICLE STARTER

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• **Abstract :**

Fingerprint recognition technology allows access to only those whose fingerprints that are pre stored in the memory. Stored fingerprints are retained even in the event of complete power failure or battery drain. These eliminates the need for keeping track of keys or remembering a combination password, or PIN. It can only be opened when an authorized user is present, since there are no keys or combination to be copied or stolen, or locks that can be picked. The fingerprint based lock therefore provides a wonderful solution to conventionally encountered inconveniences.

Biometric system includes various types such as face recognition, voice recognition, fingerprint recognition, eye recognition. Among these techniques the fingerprint recognition is the most widely used. This is because fingerprint of every person on the earth is unique and can provide good reliability compared to the other conventional methods. Fingerprint biometrics are easy to implement. The two significant parts of fingerprint biometric system is Identification and Authentication .

Keywords: Fingerprint sensor, Arduino UNO, LCD, Relay, Buzzer.

INTRODUCTION

Because of increasing number of theft cases of the Automobile there is a need to enhance the security level of the vehicles. Traditional and commonly used key locks available in the vehicles are easily unlocked by the professional thieves. With the help of master key it becomes very easy to unlock the lock of the vehicles by the thieves. This creates the demand of such type of lock which is new and provides an additional security level. The new and modern lock must be unique i.e. it must be only unlocked by special and specific key. This type of feature is available in the biometrics locks i.e. the lock which can only be locked and unlocked by the human body features. Biometrics can include: face recognition, voice recognition, fingerprint recognition, eye (iris) recognition. Leaving that conventional method behind came in the concept of igniting the vehicles using key. And now, Keys are being replaced by Push start buttons. This paper was started with the sole purpose of eliminating keys as conventional method of starting the vehicle. With the introduction of Biometrics in the 18th century, security advancement in technology has gone up to various levels. In the 18th century it was used to verify the employees working for the British Empire. Since then Biometrics has taken its toll. Biometrics is formed from the Greek words 'Bio' and 'Metrics' where

'Bio' means 'life' and 'Metrics' means 'to measure'. Finger print of a person is read by a special type of sensor. Finger print sensor can be interfaced.

I. LITERATURE SURVEY

1.) The method recommended by David G. Lowe to identify image personality traits from scale-invariant key points. This paper provides a method for extracting separating ISSN NO: 0776-3808 http://aegaeum.com/ Page No: 223 AEGAEUM JOURNAL Volume 8, Issue 5, 2020 invariant features from photographs that can be used to securely align different views of an object or scene. The features are invariant to the scale and rotation of the image, and robust matching is shown.. The features are highly distinctive in the sense that, against a large database of features from many images, a single feature can be matched correctly with high probability. This paper also describes an approach for object recognition using these features. The recognition taking place by matching physical features with a App database from. Chandra Prakash Singh1 IJECS Volume 3 Issue 1 January 2014 Page No.3805-3812 Page 3810 known objects using a super quickneighboring algorithm, followed by a Hough transformation to define clusters belonging to a single object, and finally perform a low-square solution for consistent pores.

2.) Ratha et al. proposed a segmentation or binarization algorithm based on adaptive flow orientation. In this technique, the orientation field is determined at each point in the illustration to obtain the ridge directions. A 16x16window aligned along the path of the ridge is called around each pixel to segment the ridges. The number of the projection is estimated along the ridge directionEach pixel is considered. The sum of the projection is determined along the ridgedirection. The ridge centers appear in the projection as peak points. Ultimately, the ridge skeleton obtained emitted by morphological treatments.

3.) Asker M. Bazen et al. proposed a program for ascertaining the correlation of fingerprints. A correlation-based system for verifying fingerprints is presented in this paper. This system uses the richer gray-scale information of the fingerprints directly, unlike traditional minutiae-based systems. The correlation-based fingerprint verification system selects satisfactory templates first in the senate raceUse the matching template to locate them in the secondary print and compare the two fingerprints ' template positions. The correlation-based fingerprint verification system, unlike minutiae-based systems, is capable of handling images of poor quality from which no minutiae can be reliably extracted and fingerprints suffering from nonuniform shape distortions.

4.) Another paper proposed a novel approach in fingerprint images for minute filtering. Existing computational methods for minute filtering use heuristics and ad-hoc rules to eradicate these false positives where the solution to gray level is based on the use of raw pixel values and a supervised classifier such as neural networks. They proposed two new techniques for thorough checking on the basis of noncharacteristics of n-trivial gray level.The features proposed intuitively represent the minutiae neighborhood's structural properties leading to better classification. To distinguish with reasonable accuracy between minutiae and non-minutiae communities, they use directionally selective steerable wedge filters. We even suggest a second technique based on the expansion of Gabor, which even results in Discrimination. They present an

objective assessment of the two algorithms. In addition to thorough checks, the feature description can also be used for thorough detection and quality assessment.

5.) Online fingerprint recognition was proposed by Hoi Le et al using a simple and distortion-tolerant method of hashing. National IDcard, electronic commerce and ISSN NO: 0776-3808 http://aegaeum.com/ Page No: 224 AEGAEUM JOURNAL Volume 8, Issue 5, 2020 computer network access are some scenarios where reliable identification is a must. Existing authentication systems that rely on knowledge-based approaches such as passwords or tokens such as magnetic cards and passports pose serious security threats due to susceptibility to social engineering attacks and simple sharing or misuse of passwords and PINs. Biometrics like fingerprint, face, retina of the eye, and voice provide a morereliable means of authentication. It is difficult, however, because of the large biometric database and complicated biometric measuresThe layout of both accurate and rapid biometric recognition is difficult. Quick fingerprint indexing is one of the most difficult discrimination faced in the authentication system of signatures. They make a particular contribution in this paper by introducing a new robust indexing scheme that is not only able to fasten the identification of fingerprints process.

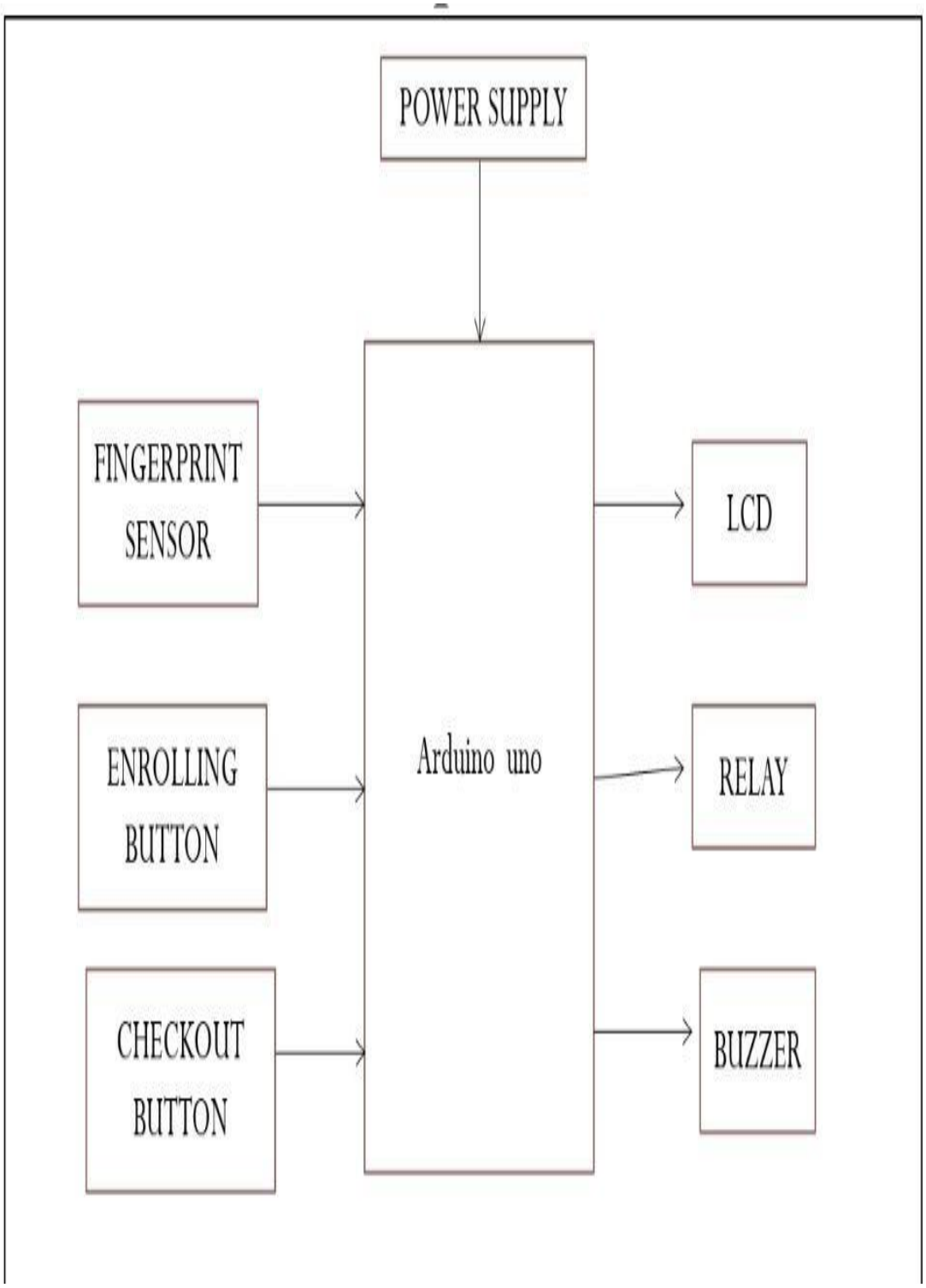
6.) Coetzee and Botha have proposed a binarisation technique based on using MarrHilderithoperator extracted edges. The resulting edge image is used to obtain the binarized image in conjunction with the original gray scale image. This is based on line following andline thinning's recursive approach.With line after line with thinning. In each point of the recursive loop, two adaptive windows, the edge window and the grayscale window are used. The pixel with the lowest gray-scalevalue is selected to start with and a window is centered on it.The window boundary will then be examined to determine the window's next position.

II. EXISTING METHOD

- In order to prevent unauthorized access to these devices, passwords and other pattern based authentication method are being used in recent time.
- However, password-based authentication has an intrinsic weakness in password leakage. • While the patterns are easy to steal and reproduce. In this , we introduce an implicit authentication approach that enhanced the password pattern with additional security layer.

III. PROPOSED METHOD

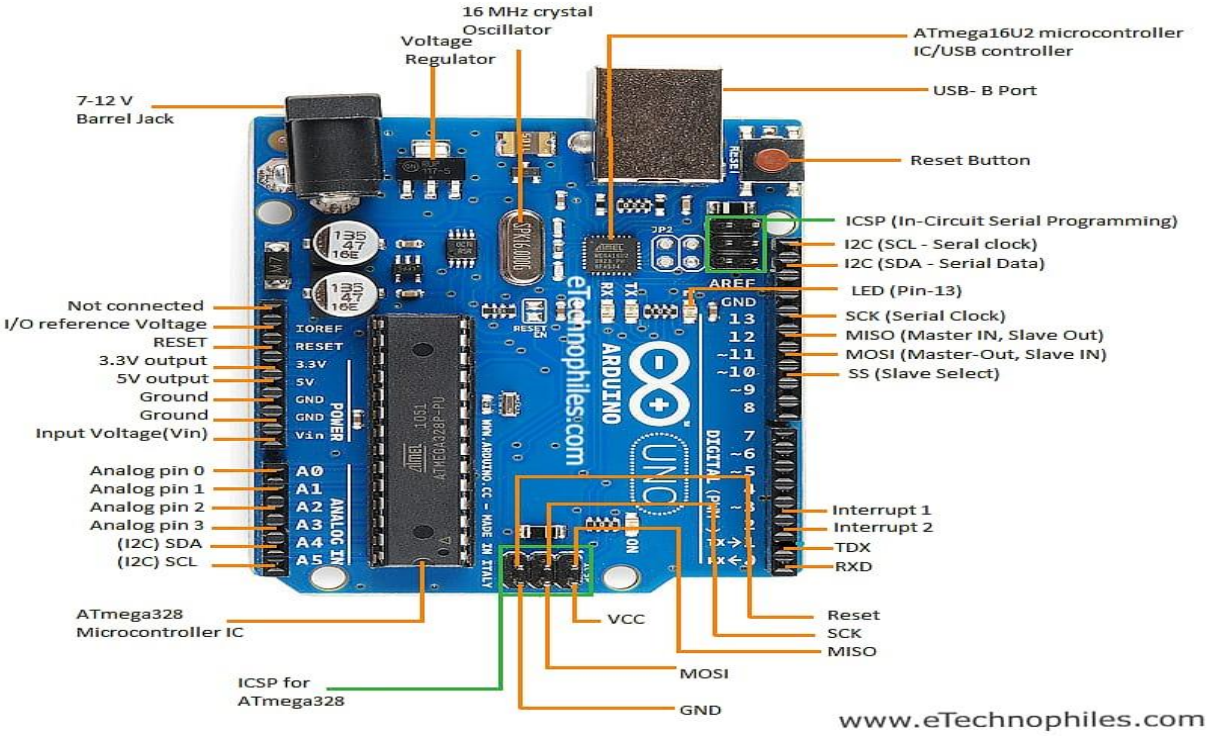
- In the design of this fingerprint based vehicle starting system, signals are generated by the Arduino to appropriate module circuit.
- The Arduino reads the state of the input buttons which could be either a 1 or a 0. The signal Arduino gets from the input button tells what to work on at that time.
- This project is aimed to replace the push-button in vehicle ignition and create a more reliable and secured way of starting the ignition with fingerprint pattern only.
- The Vehicle will be ignited only when the authorized person scans his/her finger on the fingerprint module. The fingerprint of the authorized persons are stored in the fingerprint module.
- When his/her finger on the fingerprint module then the data of the placed finger is matched with the stored data in the module. If the fingerprint data is found in the module then match the condition occurs and the microcontroller ignites the vehicle otherwise vehicle will not start.


POWER SUPPLY
FINGERPRINT SENSOR
ENROLLING BUTTON
CHECKOUT BUTTON
Arduino uno
LCD
RELAY
BUZZER

IV. NUMBER OF MODULES

Arduino Uno Microcontroller (ATmega328p) :

- The Arduino Uno is a microcontroller board based on the ATmega328p. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs 16 MHz ceramic resonator, a USB connection, a powerjack, an ICSP header, and a reset button.
- It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.
- 18The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to serial converter .



LCD Display :

- A liquid crystal display (LCD) is a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector.
- Each pixel consists of a column of liquid crystal molecules suspended between two transparent electrodes, and two polarizing filters, the axes of polarity of which are perpendicular to each other.
- Without the liquid crystals between them, light passing through one would be blocked by the other.
- program must interact with the outside world using input and output devices that communicate directly with a human being. One of the most common devices attached to an controller is an LCD display.

FINGER PRINT SENSOR :

- Fingerprint processing includes two parts: fingerprint enrolment and fingerprint matching (the matching can be 1:1 or 1:N).When enrolling, user needs to enter the finger two times.
- The system will process the two time finger images, generate a template of the finger based on processing results and store the template.
- When matching, user enters the finger through optical sensor and system will generate a template of the finger and compare it with templates of the finger library

RELAY :

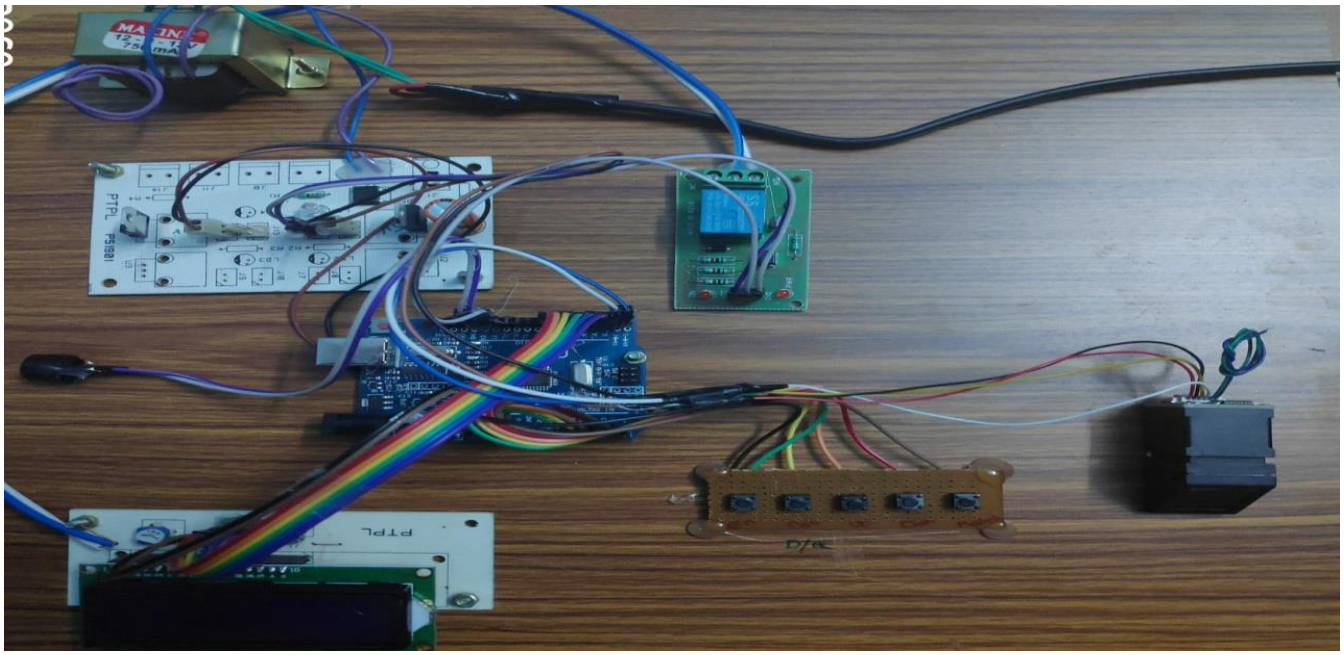
- A relay is an electrical switch that opens and closes under the control of another electrical circuit .
- In the original form , the switch is operated by an electromagnet to open or close one or many sets of contacts.
- A relay is able to control an output circuit of higher power than the input circuit it can be considered to be , in a broad sense , a form of an electrical amplifier .

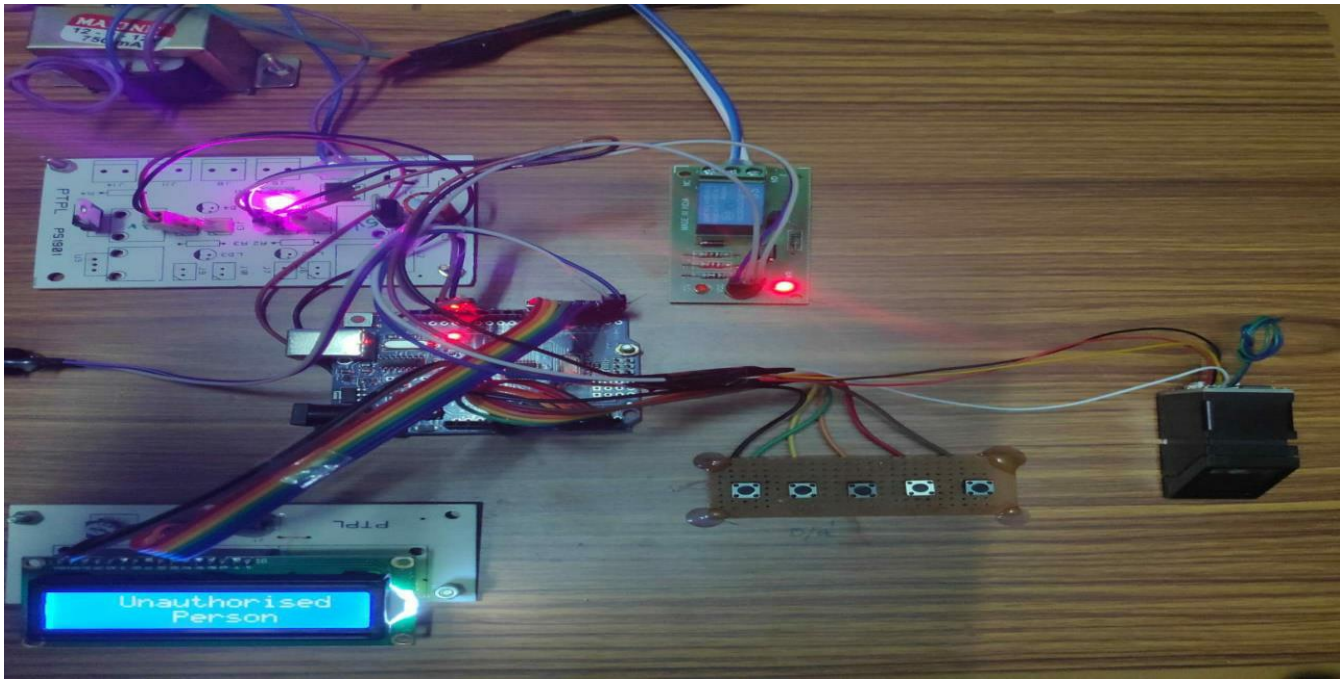
BUZZER :

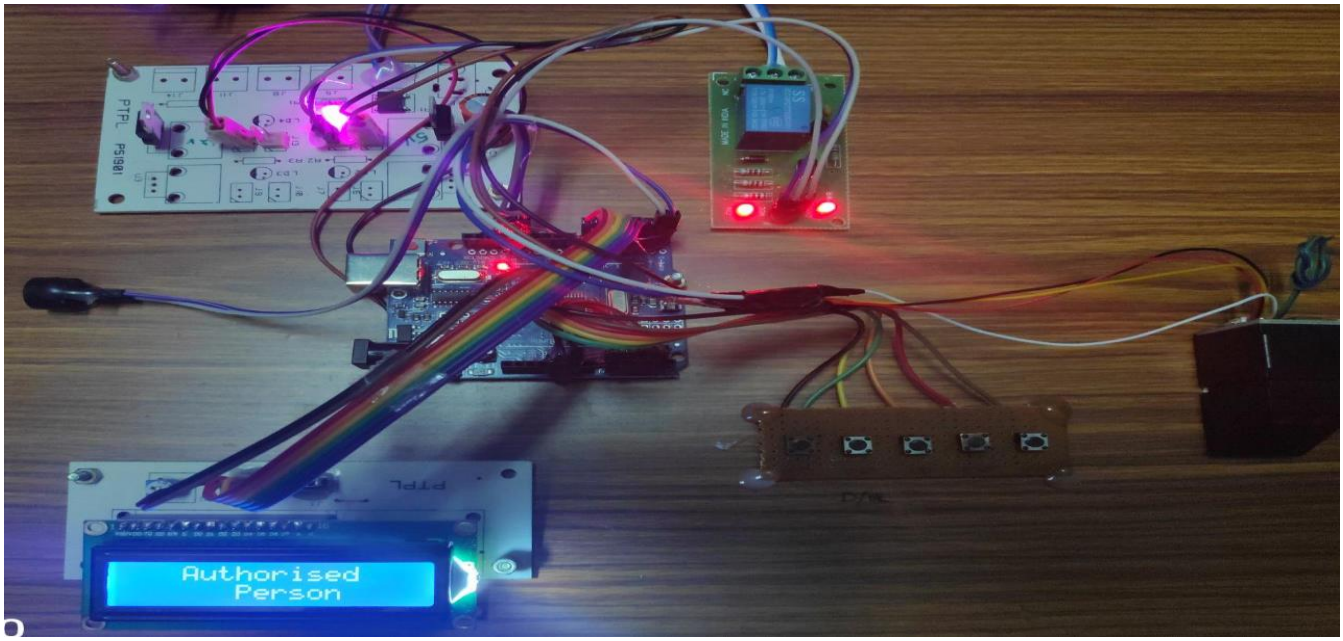
- A buzzer or beeper is a signaling device, usually electronic, typically used in automobiles, household appliances such as a microwave oven, or game shows.
- It most commonly consists of a number of switches or sensors connected to a control unit that determines if and which button was pushed or a preset time has lapsed, and usually illuminates a light on the appropriate button or control panel, and sounds a warning in the form of a continuous or intermittent buzzing or beeping sound.

V. RESULTS

Realizing a project physically has lots to do with research, choice of component and testing of the components. The project was implemented and tested to ensure proper operation under stated instruction. The various modules were tested and satisfactory results were obtained. As the components used fall within the tolerance value of the components, hence an assurance of the proper functioning of the system. .From the Figure 5 as depicted above, it shows that the designed system performs the measured values.







VII. CONCLUSION

This work is a well operating prototype of a fingerprint based vehicle staring system. The system intelligent agents were able to communicate well and appropriate output is given under user input. The system requests for user's finger, process it and give appropriate output based on if the finger is stored in the fingerprint module or not. The system is also able to enroll new user's finger at request but prompt for passcode before it could be done. Passcode editing can also be done on request in the system. Hence, fingerprint technology improves the security of an automobile making it possible for the car to be used by only authorized users. Therefore implementing this system on vehicles makes the achievement of our car security system comes in a cheap and easily available form. The output is viewed with the use of an LED. Biometric recognition systems present security and convenience than conventional methods of personal recognition.

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