Fingerprint Based Security System for Vehicle

Khot.J.S.[1], Rahinj Omkar[2], Bhosale Sanket[2], Pagare Hrushabh[2]

[1]Assistant professor, Parikrama College of Engineering, Kashti, Maharastra, India

[2]Students, Parikrama College of Engineering, Kashti, Maharastra, India

ARTICLEINFO

ABSTRACT

The security of vehicles is very difficult to maintain in daily life, so in order to increase and improve vehicle security, we need a fingerprint-type lock that can be used to start the vehicle. For this reason, the focus of this paper is on the use of fingerprint sensors to start vehicles. We came upon a large number of automobiles. Vehicle jacking and vehicle napping happen all the time, every day. Then, in order to increase security and prevent unauthorized usage of the vehicle, this study was carried out. This project's main goal is to investigate how to transform an electric engine starter into a fingerprint-based engine starter in order to improve and create higher vehicle security. The focus of this project is on the fingerprint's design and adaptability. We came to the conclusion that the novel Fingerprint Engine Starter for Motorcycles and Scooters considerably varied from the existing Electric Engine Starter System after studying the full inquiry. Compared to the current Electric Engine Starting System, the assessed Fingerprint Engine Starter for vehicles offers a higher level of security. This report therefore entirely depends on the provision of vehicle security.

Keywords : Motorcycles, Scooters, vehicle security

I. INTRODUCTION

Vehicle security is an important issue these days due to the rising number of vehicle thefts. Also one more issue with vehicles is handling its keys. Keys need to be carried and misplacing keys or losing them will cause a serious issue. Here we propose a solution to this problem by using a fingerprint authenticated vehicle starter system. The system provides a secure and hassle free way to start/stop vehicle engine. User just needs to scan finger to start the vehicle, no need to carry any key.

The system only allows authorized users to start the vehicle. Users can first register into the system by scanning fingerprints. The system allows multiple users to register as authorized users. When into monitoring mode, the system checks for users to scan. On scanning, the system checks if user is authorized user and starts vehicle for authorized users only. The fingerprint sensor is connected to the microcontroller and also we have an LCD display along with push buttons and starter motor. The motor is used to demonstrate as vehicle starter. This system automates

as well as vehicle security using fingerprint based system.

II. BLOCK DIAGRAM

Thissectionwilldiscussthedesignprocedureandthe basictheory ofcomponentsusedforthiswork:

1) Arduino Board
2) Power Supply
3) Motor driver
4) Dc Motor
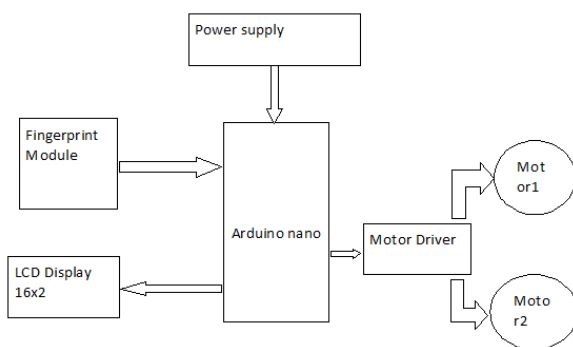5) Display
6) Fingerprint module

Fig.2. Block diagram of fingerprint vehicle Starter System

1. Arduino Board:

Here we have a tendency to use Arduino board that acts as a microcontroller unit for embedded half.
After Arduino UNO, the most popular board in the Arduino line-up is probably the Arduino Nano. Both UNO and Nano are based on ATmega328P Microcontroller but Nano is significantly smaller in size compared to UNO.

2. Power supply

When working with electronics, you always need one basic thing: Power. In every electronic circuit power supply is required .The proper working of each and every component, the exact amount of voltage and current to be supplied to it. If the power exceeds its limit, it can be fatal. Below is the circuitdiagram of

power supply which gives output of 5V& 12V as only that much is required for microcontroller.

3. MOTOR DRIVER

This L298N Motor Driver Module is a high power motor driver module for driving DC and Stepper Motors. This module consists of an L298 motor driver IC and a 78M05 5V regulator. L298N Module can control up to 4 DC motors, or 2 DC motors with directional and speed control.

4. Dc Motor

A DC motor is any motor within a class of electrical machines whereby direct current electrical power is converted into mechanical power. Most often, this type of motor relies on forces that magnetic fields produce. Regardless of the type, DC motors have some kind of internal mechanism, which is electronic or electromechanical. In both cases, the direction of current flow in part of the motor is changed periodically.

5. LCD Display:

Pin1 (Vss): Ground pin of the LCD module.

Pin2 (Vcc): Power to LCD module (+5V supply is given to this pin)

Pin3 (VEE): Contrast adjustment pin. This is done by connecting the ends of a 10K potentimeter to +5V and ground and then connecting the slider pin to the VEE pin. The voltage at the VEE pin defines the contrast. The normal setting is between 0.4 and 0.9V.

Pin4 (RS): Register select pin.The JHD162A has two registers namely command register and data register. Logic HIGH at RS pin selects data register and logic LOW at RS pin selects command register. If we make the RS pin HIGH and feed an input to the data lines (DB0 to DB7), this input will be treated as data to display on LCD screen. If we make the RS pin LOW and feed an input to the data lines, then this will be treated as a command (a command to be written to LCD controller – like positioning cursor or clear screen or scroll).

International Journal of Scientific Research in Science, Engineering and Technology | www.ijsrset.com | Vol 10 | Issue 3

256

Pin5(R/W): Read/Write modes. This pin is used for selecting between read and write modes.
Logic HIGH at this pin activates read mode and logic LOW at this pin activates write mode.
Pin6(E): This pin is meant for enabling the LCD module. A HIGH to LOW signal at this pin will enable the module.
Pin7(DB0) to Pin14(DB7): These are data pins. The commands and data are fed to the LCD module though these pins
Pin15(LED+): Anode of the back light LED. When operated on 5V, a 560 ohm resistor should be connected in series to this pin. In arduino based projects the back light LED can be powered fromthe 3.3V source on the arduino board.
Pin16(LED-): Cathode of the back light LED.

6. Fingerprint Module:

This is R307 Optical Fingerprint Reader Sensor Module. R307 fingerprint module is fingerprint sensor with TTL UART interface for direct connections to microcontroller UART or to PC through MAX232 / USB-Serial adapter. The user can store the fingerprint data in the module and can configure for identifying the person.
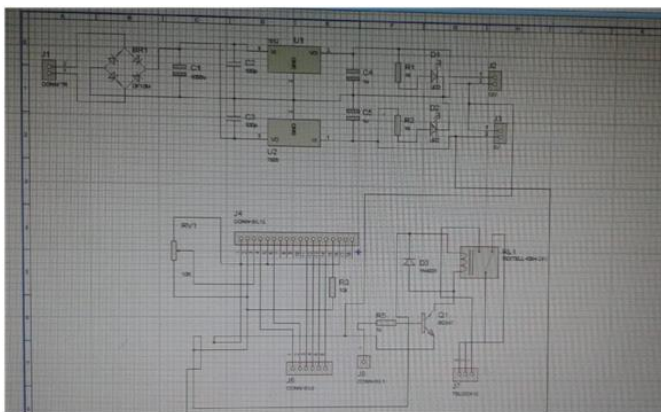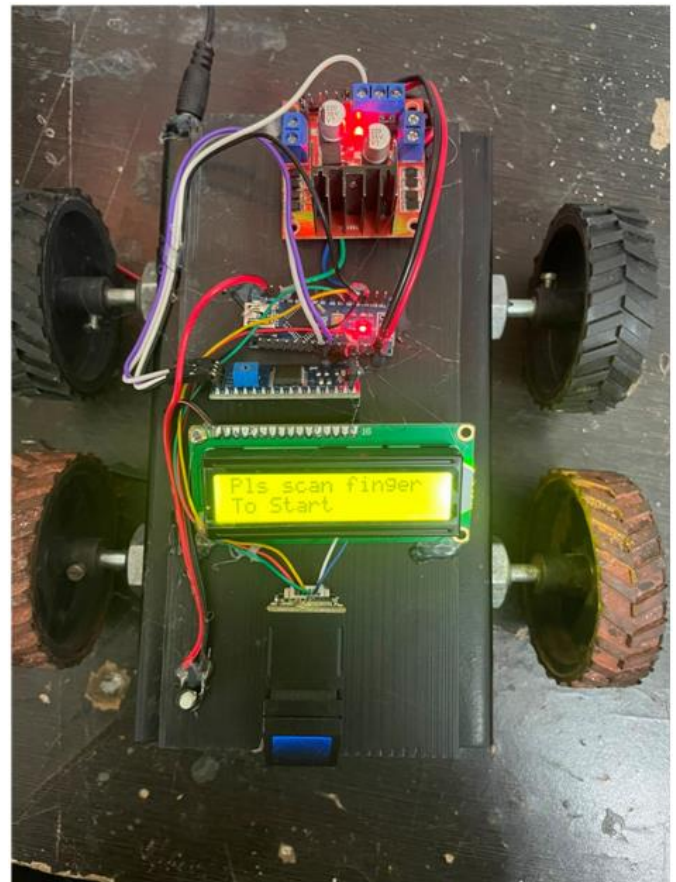
III. CIRCUIT DIAGRAM

Fig 2.1:Circuit Diagram

- Innormalconditions,nocurrentflowsthroughtransistorsandthepotentialacrosscapacitorsisalmost0V.I

fthetwotouchplatesaretouchedtogetherby a finger in this DIY project, the siren is enabled and it will reset after afewmin.

- Transistors T2 and T3 here forms a complimentary pair amplifier, with positive feedback given to the base of transistor T3 via R3 and C2. Power supply required is about 9V DC.

- This DIY project is an ultra-simple hobby circuit. The siren here will provide a quite loud audio output into the speaker. Also, we can easily experiment this DIY project with different component values to make our own special alarm.

- PCB board and soldering quality must be ensured to be of good quality. The speaker and transistor connections must be given properly to avoid damages

Actual image -

IV. ADVANTAGES

International Journal of Scientific Research in Science, Engineering and Technology | www.ijsrset.com | Vol 10 | Issue 3

257

1) simple construction
2) Easily fitted in any type of vehicle because it has less in weight
3) More security provided to vehicle
4) No pollution

V. APPLICATION

Bike Theft Prevention: Fingerprint-based security systems provide a high level of security against bike theft. By requiring the owner's unique fingerprint to unlock and start the bike, it becomes significantly harder for thieves to bypass the security system compared to traditional lock and key mechanisms.

User-specific Access: Fingerprint-based security systems allow for user-specific access control. Each authorized user can register their fingerprint, and only those registered fingerprints will be granted access to the bike. This feature is particularly useful for bike sharing programs, rental services, or bike fleets where access needs to be restricted to authorized usersarea

VI. CONCLUSION

This project is only defined for the increases the security for vehicle. For increasing the security of vehicle we use here a fingerprint sensor. By using that fingerprint sensor and GSM system we can conclude that it is possible to increase the security for vehicle.

There are many improvements or functionalities that could be added on to the current version of this system to make it more efficient in terms of security and portability. To overcome this limitation we need to add on other features such as it scans the iris or heartbeat of the concerned user and after that it allows permissibility to the user., which would enhance the level of security up to a new apex. Our proposed works deals with the project in 2 modules that consists of an LCD crystal display which shows and display the value and the other one it comprises of fingerprint sensor which takes input from the user side.

VII. REFERENCES

[1]. Faulds H. A Manual of Practical Dactylography, Police review Publishing Company, Limited. 1923.
[2]. Kumar D, RYU Y. A Brief Introduction of Biometrics and Fingerprint Payment Technology. International Journal of Advanced Science and Technology. 2009, 4.
[3]. Kumar MV, Kumar SR. Fingerprint Based Licensing System for Driving. 2014.
[4]. Mudholkar SS, Shende PM, Sarode MV. Biometrics Authentication Technique for Intrusion Detection Systems Using Fingerprint Recognition. International Journal of Computer Science, Engineering and Information Technology (IJCSEIT), 2012; 2(1).

Cite this Article

International Journal of Scientific Research in Science, Engineering and Technology | www.ijsrset.com | Vol 10 | Issue 3

258