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**Mini- PROJECT REPORT ON**

**“car door lock system using biometric identification ”**

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CERTIFICATE

This is to certify that the Mini-Project Report entitled

**“car door lock system using biometric identification ”**

Has been successfully completed by

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towards the partial fulfillment of the degree of **Bachelor of Engineering** in **Electronics and Telecommunication** as awarded by the Savitribai Phule Pune University, at **Pune Vidyarthi Griha’s College of Engineering** during the academic year 2018-19.

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**ABSTRACT**

Human identification field is very important and has undergone rapid changes with time. A very reliable human identification method is fingerprint identification. Fingerprint of each and every person is unique. So this helps in identifying a person among others or in improving security of a system. Finger print of a person is scanned by a special type of sensor. Finger print sensor can be interfaced with a microcontroller. Through keypad we can add new user and delete the existing user, also identify the user by selecting corresponding option through keypad. In this project we use a fingerprint sensor to scan a persons fingerprint to automatically operate the door of the car. For this ,we use a microcontroller to enable the door opening or closing if the matching between scanned data and the already existing data is correct. Comparison is done inside the fingerprint module itself and its output is given to microcontroller. Result is displayed in a LCD display whether the user is authorized or not. LCD also helps to make troubleshooting easier. Alarming option is provided to warn about an unauthorized usage. Microcontroller used is AT89S52

## CHAPTER-1:

## INTRODUCTION

Biometrics refers to the automatic identification of a living person based on physiological or behavioral characteristics for authentication purpose. Among the existing biomet- ric technologies are the face recognition, fingerprint recognition, finger-geometry, hand geometry, iris recognition, vein recognition, voice recognition and signature recognition, Biometric method requires the physical presence of the person to be identified. This emphasizes its preference over the traditional method of identifying what you have such as, the use of password, a smartcard etc. Also, it potentially prevents unauthorized admittance to access control systems or fraudulent use of ATMs, Time Attendance Systems, cellular phones, smart cards, desktop PCs, Workstations, vehicles and com- puter networks. Biometric recognition systems offer greater security and convenience than traditional methods of personal recognition. Fingerprint recognition represents the oldest method of biometric identification which is dated back to 2200 BC. The use of fingerprints as a personal code has a long tradition and was already used. This system focuses on the use of fingerprints for door opening and closing. The fingerprint recognition software enables fingerprints of valid users of the vehicle to be enrolled in a database. Before any user can use the vehicle, his/her fingerprint image is matched against the fingerprints in the database while users with no match in the database are prevented from using the vehicle.A microcontroller stores the data equivalent of fingerprint of the master user.Comparison between this enrolled fingerprint and the fingerprint of the person who is about to use the vehicle is done by the micro- controller.If both the fingerprints are identical control circuitry of the microcontroller sends appropriate signals to the motor relays operating the door of the vehicle.If the fingerprints are not identical microcontrollers ends signals to alarm circuitry to warn about any unauthorised use.

**CHAPTER-2:**

**DESIGN OF THE SYSTEM**

**2.1: Block Diagram –**

The following is a block diagram for the Prototype :

CRYSTAL CIRCUIT

MICRO-CONTROLLER AT89S52

RESET CIRCUIT

LCD 16\*2

Tx

FINGERPRINT MODULE

Rx

L293D MOTOR DRIVER

fig . 2.1 : System Block Diagram of Car Door Lock System Using Biometric Identification.

**2.2: Working of the System –**

Database of the valid users is stored in the fingerprint module. when a person tries to operate the vehicle then the CPU matches the fingerprint of the person with the stored database if the match result is successful then the vehicle is ignited and otherwise not.

* Power Supply:

Power supply of 5V is supplied for micro-controller and FingerPrint module respectively.

* Sensor :

Fingerprint sensorprocessing includes two parts: fingerprint enrollment and fingerprint matching. When enrolling, user needs to enter the finger two times. The system will process the two finger images, generate a template of the fingerprint 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 fingerprint database. For matching, system will compare the current finger with specific template designated in the Module;for 1:N matching, or searching, system will search the whole finger database for the matching finger.

* Microcontroller :

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. By combining a versatile 8-bit CPU with in-system programmable Flash on a monolithic chip, the Atmel AT89S52 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications.The AT89S52 provides the following standard features: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, three 16-bit timer/counters, a six-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry.

* LCD :

Liquid Crystal Displays are used for displaying status or parameters in embedded systems. When the circuit is initialized the Text message will be appeared on the LCD.

**2.3: Specifications of the System –**

1. The input voltage for microcontroller and fingerprint module is 5V. (for demonstration purpose, 5V power supply is used)
2. Operating Frequency :- Internal Oscillator Block: - 8 user-selectable frequencies, from 31 kHz to 8 MHz. External Oscillator Block: - 24 MHz

**2.4: Specifications of the components –**

* **List Of Component:**

|  |  |
| --- | --- |
| **Name Of Component** | **Specification** |
| Microcontroller | AT89S52 |
| Capacitors | 10µf,100 µf |
| Crystal | 24 MHz |
| Motor Driver IC | L293D |
| Motor | 60 RPM DC motor |
| Resistor | 470 ohm,1k ohm |
| Fingerprint Module | R307 |

* Microcontroller (AT89S52) :-
* 8K Bytes of In-System Programmable (ISP) Flash Memory
* Endurance: 10,000 Write/Erase Cycles
* 4.0V to 5.5V Operating Range
* Fully Static Operation: 0 Hz to 33 MHz
* Three-level Program Memory Lock
* 256 x 8-bit Internal RAM
* 32 Programmable I/O Lines
* Three 16-bit Timer/Counters
* Eight Interrupt Sources
* Full Duplex UART Serial Channel
* Low-power Idle and Power-down Modes
* Interrupt Recovery from Power-down Mode
* Watchdog Timer
* Dual Data Pointer
* Power-off Flag
* Fast Programming Time

**FingerPrint Module (R307):-**

* The R307 fingerprint module has two interface TTL UART and USB2.0, USB2.0 interface can be connected to the computer; RS232 interface is a TTL level, the default baud rate is 57600 , can be changed

1. Power Supply -  DC 4.2 ~ 6.0V
2. Working environment: Temperature: -20 ℃ - +40 ℃
3. Fingerprint image input time: <0.3 seconds
4. Characteristic file: 256 bytes
5. Template file: 512 bytes
6. Storage capacity: 1000 pieces

**R307 Overview**

R307 Fingerprint Module consists of optical fingerprint sensor, high-speed DSP processor, high-performance fingerprint alignment algorithm, high-capacity FLASH chips and other hardware and software composition, stable performance, simple structure, with fingerprint entry, image processing, fingerprint matching, search and template storage and other functions.

* Perfect function: independent fingerprint collection, fingerprint registration, fingerprint comparison (1: 1) and fingerprint search (1: N) function.
* Small size: small size, no external DSP chip algorithm, has been integrated, easy to install, less fault.
* Ultra-low power consumption: low power consumption of the product as a whole, suitable for low-power requirements of the occasion.
* Anti-static ability: a strong anti-static ability, anti-static index reached 15KV above.
* Application development is simple: developers can provide control instructions, self-fingerprint application product development, without the need for professional knowledge of fingerprinting.
* Adjustable security level: suitable for different applications, security levels can be set by the user to adjust.
* Finger touch sensing signal output, low effective, sensing circuit standby current is very low, less than 5uA.

**2.5: Selection of the Components –**

1. Microcontroller-

With below comparison table we have selected the AT89S52 microcontroller.

|  |  |  |
| --- | --- | --- |
| **Parameter** | **PIC18f4550** | **AT89S52** |
| **Cost** | 170 | 71 |
| **Package** | DIP | 40-DIP |
| **Pins** | 40 | 40 |
| **Operating frequency** | 32MHZ | 33MHZ |
| **UART** | 1 | 2 |
| **Supply Voltage** | 5V | 4.0V to 55V |
| **RAM** | 2KB | 256 bytes |
| **ROM** | 8KB | 8KB |
| **Coding Support** | Yes | Yes |

**CHAPTER-3:**

**RESULT AND DISCUSSION**

First of all user is asked to enroll his fingerprint .After enrollment the user’s identification is done .If the person is authorised ,the door automatically opens. After igniting the vehicle, the door automatically closes. When destination is reached ,after a key press, the door automatically opens. After a set time delay ,the door automatically closes. This system focuses on the use of fingerprints for door opening and closing. The fingerprint recognition software enables fingerprints of valid users of the vehicle to be enrolled in a database. Before any user can use the vehicle, his/her fingerprint image is matched against the fingerprints in the database while users with no match in the database are prevented from using the vehicle. A microcontroller stores the data equivalent of fingerprint of the master user. Comparison between this enrolled fingerprint and the fingerprint of the person who is about to use the vehicle is done by the microcontroller. If both the fingerprints are identical control circuitry of the microcontroller sends appropriate signals to the motor relays operating the door of the vehicle

**CONCLUSION**

* CONCLUSION:-

` Biometric identification enhances the security of a vehicle and makes it possible only for some selected users to operate the car. Thus by implementing this relatively cheap and easily available system on a car, one can ensure much greater security than that offered by a conventional lock and key.It can be deduced that the use of biometric security systems offers a much better and foolproof means of restricting the use of vehicles by unauthorized users.

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# AT89S52 Datasheet ATMEL

* Fingerprint Based Automatic Door Lock System-: www.ijareeie.com