

FINGERPRINT VEHICLE STARTER PROJECT

A PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this project report “ **FINGERPRINT VEHICLE STARTER**”

is the bonafide work of “CHARNEESHWAR K S, ARI KRISHNAN and ALDAN IMMANUEL .C”who carried out the project work under my supervision.

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ABSTRACT

FINGERPRINT VEHICLE STARTER PROJECT

The issue of vehicle hijacking or car theft due to easy access to vehicle's functional system can be reduced by using a biometric system. The starting of vehicle's engine as the necessity of protection and access restriction in many luxurious assets is now very important. Biometric systems have in a long time served as a strong security system in many different applications and it will be implemented in automobile industry. Biometric system is a technological system that uses information about a person to identify such the person. It relies on specific data about unique biological trait in order to work effectively. This system involves running data through algorithms for a particular result, usually related to a positive identification of a user or other individuals.

Keywords: Vehicle,Biometric System,Security System, Automobile Industry.

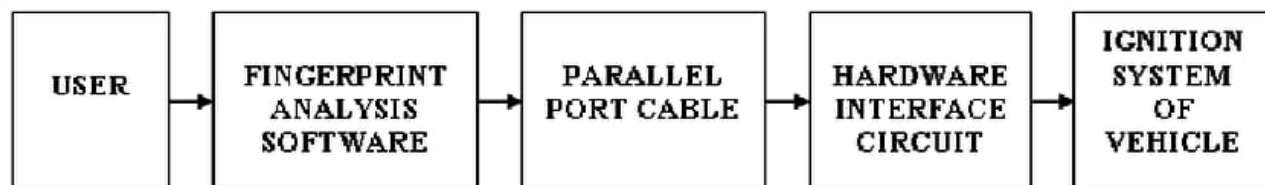
OBJECTIVE OF THE PROJECT

The objective of the project is to prevent vehicle thefts. User just needs to scan finger to start the car, no need to carry any key. The system only allows authorized users to start the vehicle. User just needs to scan finger to start the car, 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.

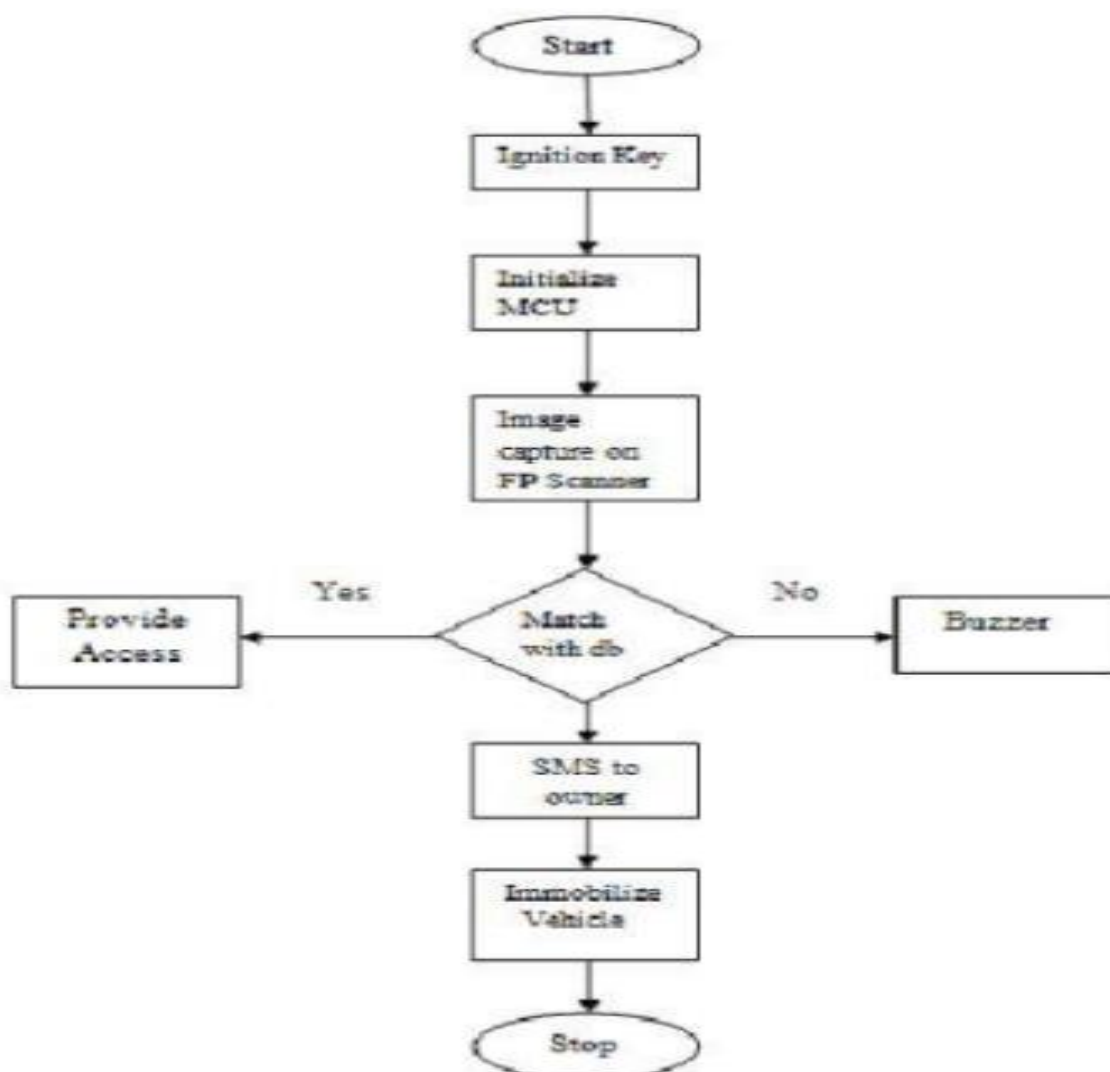
LITERATURE SURVEY

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 combinations to be copied or stolen, or locks that can be picked. The fingerprint based lock therefore provides a wonderful solution to conventionally encountered inconveniences. This report focuses on the use of fingerprints to unlock locks, as opposed to the established method of using keys .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 project, we introduce an implicit authentication approach that enhanced the password pattern with additional security layer .Biometric systems have overtime served as robust security mechanisms in various domains. Fingerprints are the oldest and most widely used form of biometric identification. A critical step in exploring its advantages is to adopt it for use as a form of security in already existing systems, such as vehicles. Vehicle security system has been a topic of great interest over the years due to the increasing vehicle theft cases reported all over the world. Most of the advanced vehicle security systems best suit the four wheelers. As of the security system for two wheelers is concerned, the systems available in market are of no match to the well-equipped thieves. When under attack, these systems can only immobilize the engine and sound a loud alarm. The proposed reliable and robust design of Two Wheeler Vehicle Security System (TWVSS) with features enhancing the security of the vehicle and ensuring the safety of the rider .Fingerprint matching techniques are of two types: graph based and minutiae based. The template size of the biometric information based on minutiae is much smaller and the processing speed is higher than that of graph-based fingerprint matching.

BLOCK DIAGRAM OF FINGERPRINT VEHICLE STARTER



FLOW CHART OF FINGERPRINT VEHICLE STARTER



ALGORITHM OF FINGERPRINT VEHICLE STARTER SYSTEM

1. Start
2. Place a finger and press enter button (top button) to start engine.
3. If finger already stored in the scanner module, start the engine.
4. If not, go back to number 1 and give no output.
5. Press ENTER button (bottom button) to enter passcode. 6. If passcode matches with saved code in chip's EPROM. Open user admin, activate module to receive finger image data and store it and go to number 7.
7. If passcode entered does not correlate with chip's value in the EPROM, signify wrong passcode and go back to number 4.
8. Navigate through options in user admin to edit passcode and exit interface.
9. Stop

COMPONENTS

HARDWARE COMPONENTS :

- Fingerprint module
- LCD
- Push Buttons
- Dc Motor
- Motor driver
- Atmega 328 Microcontroller
- Relay
- Resistors
- Capacitors
- Diodes
- Power supply adapter(12V,1A).

DESCRIPTION

The ATmega328 is a microcontroller board based on the ATmega328. The ATmega328 board functioning is different from all other boards in that it does not use the FTDI USB to serial driver chip. Instead, the ATmega328 is programmed as a USB to serial converter. The ATmega328 is a low power CMOS 8 bit microcontroller based on the AVR enhanced RISC architecture structure.

The fingerprints of only the authorised persons are enrolled for further verification into the Microcontroller. The microcontroller controls the fingerprint sensor when an authorized person is scanned it allows the relay to contact and supply power to ignition system. Then the engine can be turned on. If an unauthorized person is scanned it does not make the relay to turn on. So, no current flows to the engine ignition system and it cannot be turned on.

Fingerprint Module Connected to the Engine Starting System. Anytime the device can be crank to switch on/off a device which draws more current with high voltage. The electric engine system has starter motor that is connected with the ignition switch also a supply from battery is given to the electric engine. When key is inserted the circuit closes and gives supply to starter motor and it cranks the engine. The fingerprint security system is placed here to control the engine ignition system. Power supply is given through regulated power supply board for the microcontroller.

This system is connected to the battery of the vehicle. So it draws current supply from battery to the fingerprint sensor. Digital switch used to control high voltage and current than normal board does. When input logic voltage relay will switch to allow current to flow or cut off depending on wiring. When this relay is activated by giving authorized person's fingerprint as an input the engine is turned on by the starting coil.

When the ignition is given, the self-motor starts to rotate and makes the switch coil to rotate. The Bendix gear grabs the switch coil or starting coil after this process and the engine of the vehicle starts. When the engine turns on, the crank shaft begins to rotate continuously. This total model is fixed in the car and when authorized person scans their finger the vehicle's engine starts. Results Both for

authorized and unauthorized persons fingerprint the outputs are obtained. The Arduino board is connected to the microcontroller.

When a finger is placed over the fingerprint sensor it scans and compares with pre-loaded data and if the fingerprint matches then the ignition system can be turned on, if the fingerprint does not matches then the ignition system cannot be turned on.

APPLICATIONS

- This can also be implemented in other automobiles apart from cars .
- Others types of bio-metrics can also be used.

RESULT

- 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.

OUTCOME OF THE PROJECT

- 1] This work is a well operating prototype of a fingerprint based vehicle starting system.
- 2] The system intelligent agents were able to communicate well and appropriate output is given under user input.
- 3] 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.
- 4] The system is also able to enroll new user's finger at request but prompt for passcode before it could be done.
- 5] Passcode editing can also be done on request in the system.
- 6] Hence, fingerprint technology improves the security of an automobile making it possible for the car to be used by only authorized users.
- 7] Therefore implementing this system on vehicles makes the achievement of our car security system comes in a cheap and easily available form.
- 8] The output is viewed with the use of an LED.

- 9] Biometric recognition systems present security and convenience than conventional methods of personal recognition.

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