



FINGER PRINT BASED VEHICLE STARTING SYSTEM USING GSM

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ABSTRACT

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. A technological system that uses information about a person to identify that person is called a biometric system. For it to work well, it needs specific information about a unique biological trait. This system involves running data through algorithms for a particular result, usually related to a positive identification of a user or other individuals. The Arduino generates the signals for the appropriate module circuit.

I.INTRODUCTION

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. The majority of cutting-edge vehicle security systems are best suited for 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 .

Only those fingerprints that have already been stored in the memory can be accessed using fingerprint recognition technology. 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 unlocking locks with fingerprints rather than keys, as is currently the case [1]. Passwords and other pattern-based authentication methods have recently been used to prevent unauthorized access to these devices. However, password-based authentication has an intrinsic weakness in password leakage. While the patterns are easy to steal and reproduce. In this paper, we introduce an implicit authentication approach that enhanced the password pattern with additional security layer [2]. Over time, biometric systems have become effective security tools in a variety of fields. 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 [3]. Due to the rising number of reported cases of vehicle theft worldwide, the subject of vehicle security systems has garnered a lot of attention over the years. The majority of cutting-edge vehicle security systems are best suited for 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 [4]. 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 [5].

II. PROPOSED SYSTEM:

In the design of this fingerprint based vehicle starting system, signals are generated by the Arduino to appropriate module circuit. The whole system is aimed to be constructed in a plastic casing to enhance heat evacuation and working efficiency of the system. 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.

In this system, we are using Arduino UNO as microcontroller and Fingerprint module is interfaced with Arduino. Arduino will compare the fingerprints stored in database. If fingerprint matched, the vehicle would start. If fingerprint not matched buzzer will make sound to alert. And, a message will be sent to the vehicle owner.

BLOCK DIAGRAM:



III. MODULE DESCRIPTION:

A. Arduino Uno Microcontroller :

Arduino Uno is a microcontroller board based on 8-bit ATmega328P microcontroller. Along with ATmega328P, it consists other components such as crystal oscillator, serial communication, voltage regulator, etc. to support the microcontroller. Arduino Uno has 14 digital input/output pins (out of which 6 can be used as PWM outputs), 6 analog input pins, a USB connection, A Power barrel jack, an ICSP header and a reset button. Arduino can be used to communicate with a computer, another Arduino board or other microcontrollers. The ATmega328P microcontroller provides UART TTL (5V) serial communication which can be done using digital pin 0 (Rx) and digital pin 1 (Tx). An ATmega16U2 on the board channels this serial communication over USB and appears as a virtual com port to software on the computer. The ATmega16U2 firmware uses the standard USB COM drivers, and no external driver is needed. However, on Windows, a .inf file is required. The Arduino software includes a serial monitor which allows simple textual data to be sent to and from the Arduino board.



Fig 1: Arduino UNO controller

B. GSM MODULE:

The **SIM900A** is a readily available **GSM/GPRS module**, used in many mobile phones and PDA. The module can also be used for developing IOT (Internet of Things) and Embedded Applications. SIM900A is a dual-band GSM/GPRS engine that works on frequencies EGSM 900MHz and DCS

1800MHz. SIM900A features GPRS multi-slot class 10/ class 8 (optional) and supports the GPRS coding schemes CS-1, CS-2, CS-3 and CS-4.



Fig 2:GSM module

R307S Optical Fingerprint Reader Sensor Module

This is the R307S Optical Fingerprint Reader Sensor Module. R307S fingerprint module is a fingerprint sensor with a 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 it in 1:1 or 1: N mode for identifying the person.

The FP module can directly interface with a 3.3 or 5v [Microcontroller](#). A level converter (like MAX232) is required for interfacing with PC serial port.

Integrated image collecting and algorithm chip together, ALL-in-One Fingerprint reader can conduct secondary development, can be embedded into a variety of end products. Users can conduct secondary development, can be embedded into a variety of end products, such as access control, attendance, safety deposit box, car door locks.



Fig 3:Fingerprint module

IV.RESULTS

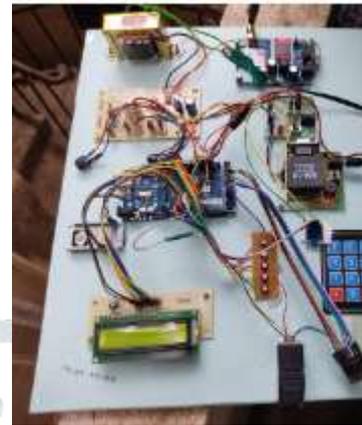


Fig 4:Hardware Implementation

V.CONCLUSION

This work is a well operating prototype of a fingerprint based vehicle starting system. The system intelligent agents were able to communicate well and appropriate output is given under user input. Based on whether the user's finger is stored in the fingerprint module or not, the system processes the request and provides the appropriate output. 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 offer convenience and security over traditional methods of personal identification.

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