

# Automatic Bike Ignition System

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**ABSTRACT**—The problems related to vehicle hijacking or vehicle theft are increasing day by day. It can be avoided using bio-metric system that is fingerprint sensor. To give protection, to starting of vehicle engine which is very important now a days. Fingerprint sensor is cheap, also used for various application. Every person has unique fingerprint, so it helps in identifying a person which will improve security to the system. Fingerprint sensor depend on specific data of unique biological trait in order to work constructively. It can be interfaced with Arduino. Three buttons are connected to Arduino, to add, to delete and to match the existing fingerprint. In this paper, we use fingerprint module to read the fingerprint. Arduino is used to enable the ignition system. If the scanned data and existing data matched with each other then it will start engine of vehicle. Comparison of these two data are done in fingerprint module itself and output is given to Arduino. LCD is used to display the result. Which shows whether the user is authorized or not.

The sensor used is RS305. Arduino used is UNO. It consist 14 digital pins. It operate at 5 volts. Each pin can provide and receive maximum 40 mA.

**Keywords-Fingerprint sensor, LCD, Arduino, Relay motor,**

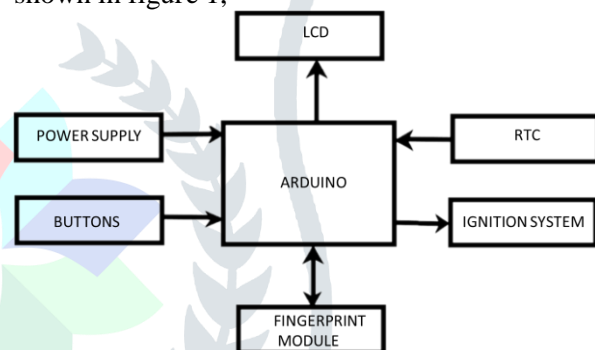
## INTRODUCTION

In Fingerprint sensor it allows access only to those whose fingerprints are already stored in the memory. Stored fingerprints are maintain in the memory even after complete power failure or battery drain. These overcome the need for keeping track of keys or remembering a password or PIN. It can only be opened when current fingerprint matches with existing one, since there is no need of keys or combinations to be copied or stolen, or the locks that can be picked. The fingerprint based lock therefore it provides a wonderful solution to encountered inconveniences. This report focuses on the use of fingerprints to unlock the locks, as opposed to the established method of using keys [1]. In order to avoid unauthorized access to these system, passwords and other pattern based authentication method are used in recent time. But the patterns are easy to steal and reproduce. So in this paper, we developed an implicit authentication approach that escalate the password pattern with additional security [2]. Biometric systems have overtime provided as strong security mechanisms in various domains. A critical step in exploring its advantages is, to use it as a form of security in already existing systems, for example vehicles [3]. Vehicle security system has been a topic of great interest over the years due to the increasing vehicle theft cases all over the world. The

security system which is available in market are of no match to the well-equipped thieves. When the system is under attack, these systems makes a sound that is loud alarm and it immobilized the engine. The proposed system is reliable and robust design of Two Wheeler Vehicle Security System (TWWSS) with the features which Enhance the security of the vehicle and ensuring the safety of the rider [4]. There are two Fingerprint matching techniques : graph based and minutiae based. The template size of the biometric information based on minutiae is so smaller and speed is higher than that of graph-based fingerprint matching [5].

## DESIGN OF PROPOSED SYSTEM

The Block diagram of Automatic bike ignition system shown in figure 1,



## ARDUINO

In this design signals are generated by the Arduino to appropriate module circuit. The Arduino reads input buttons which are either 1 or 0. In this project, the push-button in vehicle ignition is replaced with fingerprint module which is reliable and secured way of starting the ignition. The Arduino here is used because beginners those who have no software or electronics experience can able to use it properly. Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. It tells your board what to do by sending a set of instructions to the microcontroller on the board.

## FINGERPRINT MODULE

### FINGER PRINT SENSOR

Each finger's ridges and valleys act as insulators, restricting the flow of current produced by the reader. As this happens, the scanner can use this data to generate clear picture of the individuality of finger, or 'Biometric Identifier'. Once these details are stored, each time your fingerprint is scanned, it can

authenticate your identity. Matching your print to you. To build a more complete and accurate image of your fingerprints, the scanner often requests to take multiple prints from the same finger.

optical scanners, capacitive fingerprint scanners generate an image of the ridges and valleys that make up a fingerprint. But instead of sensing the print using light, the capacitors use electrical current. The sensor is made up of one or more semiconductor chips containing an array of tiny cells. Each cell includes two conductor plates, covered with an insulating layer. The cells are tiny smaller than the width of one ridge on a finger.

### REAL TIME CLOCK

Real time clocks (RTC), as the name recommends are clock modules. The DS1307 real time clock (RTC) IC is an 8 pin device using an I2C interface. The DS1307 is a low-power clock/calendar with 56 bytes of battery backup SRAM. The clock/calendar provides seconds, minutes, hours, day, date, month and year qualified data. The end date of each month is automatically adjusted, especially for months with less than 31 days. They are available as integrated circuits (ICs) and supervise timing like a clock and also operate date like a calendar. The main advantage of RTC is that they have an arrangement of battery backup which keeps the clock/calendar running even if there is power failure. An exceptionally little current is required for keeping the RTC animated. We can find these RTCs in many applications like embedded systems and computer mother boards, etc. In this article we are going to see about one of the real time clock (RTC), i.e. DS1307.

### WORKING OF PROPOSED SYSTEM

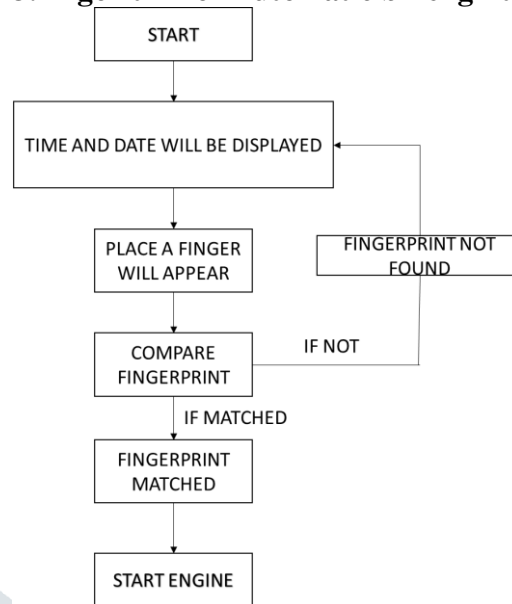
While scanning finger it includes two parts: enrolling of fingerprint and matching of fingerprint. At the time of enrolling, user is supposed to enter the finger two times. The system will process these two data of finger images and will generate a template of the fingers and store the template in memory.

At the time of matching, user needs to enter the finger through optical sensor and system will produce a template of the finger and it will compare with already existing templates of the finger.

For 1:1 matching, system will compare the current fingerprint with existing template which is stored in the memory; for matching 1:N, the system will search the whole finger library. In both Cases, system result will be either fingerprint matched or fingerprint not found.

And the RTC will display live date and time which will help the user to get live updates of bike in the case of wrong fingerprint attempts.

### 3. Algorithm of Automatic bike ignition system :



1. Start
2. RTC module will show time and date.
3. Place a finger will display on LCD.
4. If finger already stored in the memory and the current fingerprint matches then engine starts.
5. If not then it will display fingerprint not found.
6. It will return to number 2 step.
7. Stop.

### CONCLUSION

The system communicates well and proper output is given to user input. The system requests user to place the fingerprint the system process it and gives suitable output according to the fingerprint which was stored in fingerprint sensor. The system is also adds new user's fingerprint but it ask for password which is only known to authenticate user. Password editing can also be done in the system on request. Hence, fingerprint technology improves the security which makes possible for the bike to be used by only authorized users. Therefore implementing this system on vehicles makes the achievement of bike security system which comes in a cheap and easily available form. The output is given to ignition system. RTC output shows the real time and date which help user to get update of bike.

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