

Advanced security and alert system for two wheelers

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Abstract

Due to the increasing vehicle theft cases all over the world vehicle security system has been a topic of great interest over the years. Most of the best suited advanced security system is available only for two wheelers, but the system available for two wheelers in the market are of no match to the well-equipped thieves. In this paper we are proposing a reliable design of two wheeler vehicle security system (TWVSS) which enhances and ensures the safety of the rider. In our proposed security system we are adding new features in addition to engine immobilizer and alarm. One of the important features supported by our system is to alert the owner by sending an SMS about the theft attempt, using GSM Technology. The system is compatible with all brands of the vehicle. For the worst case scenario Redundancy is maintained to make the system reliable.

KEYWORDS: Compatibility, GSM Technology, Redundancy, SMS.

INTRODUCTION

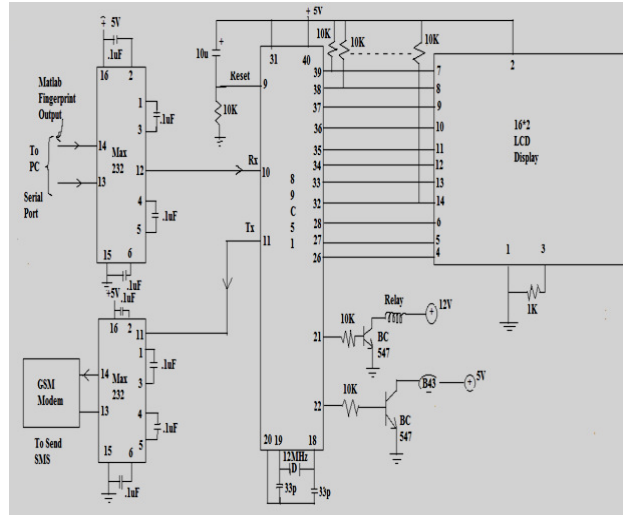
According to the report published by National Crime Records Bureau (NCRB), in the year 2011 alone 122,367 two wheeler vehicles were stolen in India. Out of which only 32,826 vehicles were recovered [1]. Nowadays we have seen that two wheelers are stolen right from the streets and from apartment parking lots. Before the police come into an action, which could be a few hours since the theft, the two wheelers are made underground leaving almost no clue behind. Later the vehicles are sold in the neighboring state or district at a very cheap price, leaving the owner and police helpless in bringing back the vehicle. The story remains the same for the rest of the vehicle. For solving this problem there is one possible way is to implement a security system in two wheelers. The security system should be capable of performing reasonably well even in unfavorable conditions to meet the desired level of security [2], [3]. The price of the security system should be kept reasonably low by the automation company otherwise the cost of the vehicle will be increased by a big margin and it will become very difficult for the company to sell the vehicle. The overall power consumption should be less of the security system i.e. 12V battery of the vehicle. Keeping all this requirements in mind we propose this new design of Two Wheeler Vehicle Security System (TWVSS).

RELATED WORK:

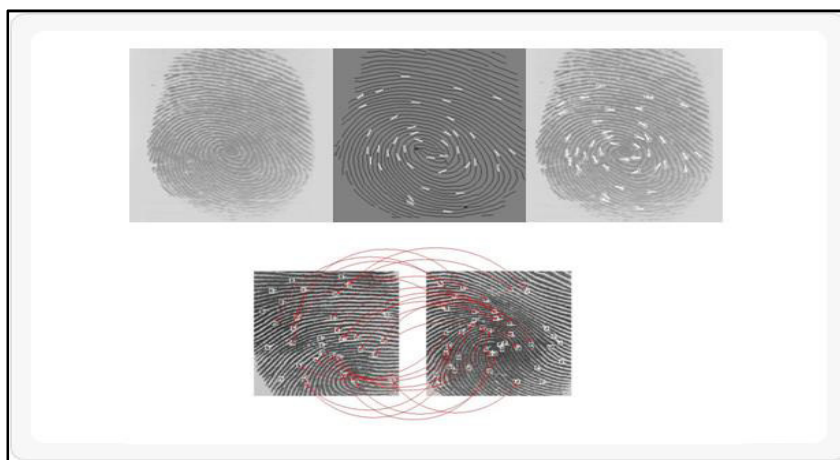
Indeed, we are not the first to observe the flaws and limitations of the present day vehicle security systems. Several researchers have described potential vulnerabilities in automotive security systems [1]. The traditional security systems as priced low, but they merely act as an alarm system and are no match to the well-equipped thief. Many security systems have been proposed over the years, e.g. [1], but almost all the recent advanced security systems are designed especially for cars. Several researchers have even used image processing technology to capture the face of driver and compare it with the picture of authorized drivers to detect the intrusion [1]. Whereas some proposed systems include finger print detection system [1] along with face detection. Since the system is complex and costly and therefore cannot be implemented on Two Wheelers. The demand is to

design a system that performs necessary function, simple to operate, reasonably priced and small enough to be placed under the seat of the vehicle.

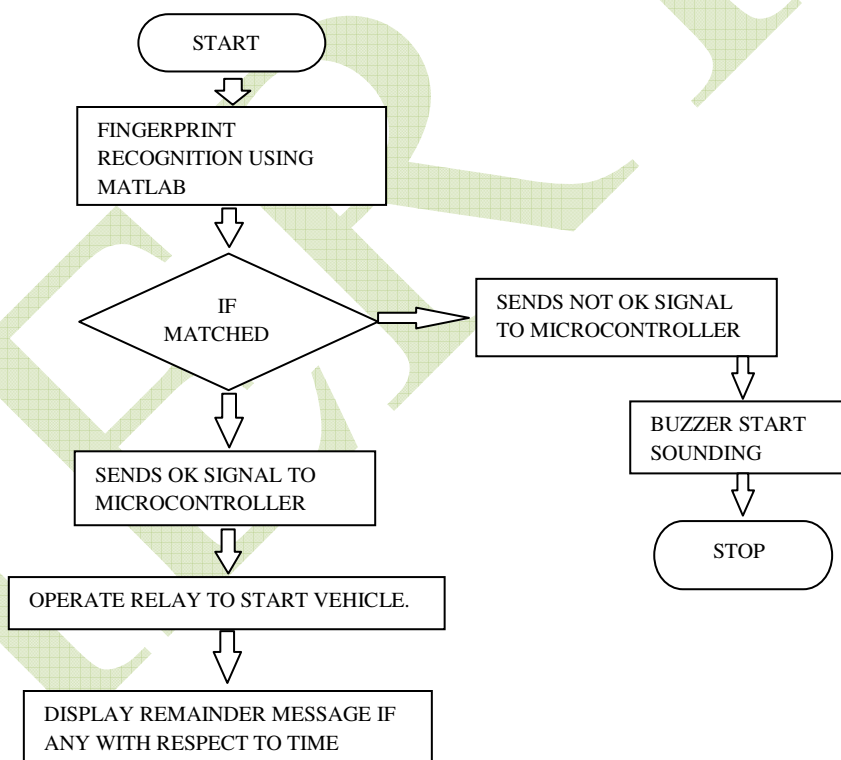
CIRCUIT DIAGRAM AND ITS DESCRIPTION



Biometrics is nothing but the study of life. It includes fingerprint, face, iris, voice, signature verification etc. But in our project we are using simple fingerprint biometric method. Finger Print proves to be one of the best traits providing good mismatch ratio and also reliable. To provide perfect security and to make our work easier, we are taking the help of fingerprint [2]. Firstly discussing about Biometrics we are concentrating on Fingerprint scanning. For this, we are using a database where we can store the fingerprints of up to 100 users. The project is designed to provide absolute security for vehicles. Normal vehicles (two or four wheelers) start with normal valid key. But there is wide scope to theft vehicle with duplicate keys. This system avoids the fitting of vehicles. Initially vehicle owner enrol in the Finger Print module (ROM). If he wants to start the vehicle scan image and microcontroller (ATMEL) 89C51 detects and compare with database of enrolment area. After checking, it gives output pulse through relay for IC engine ignition. If scan image is not valid it gives buzzer sound and display alerting message. (It is better to enrol at the time of program)[3]. Fingerprint recognition will be carried out using MATLAB and the fingerprint will be selected using the database but in actual practise fingerprint scanner will be used for the system. When the fingerprint will be matched MATLAB sends serial data of recognised fingerprint to the microcontroller by using MAX 232 IC (level shifter). If fingerprint is matched microcontroller reads the data from serial port and operates the relay. Relay is connected to pin 21 of microcontroller. The contact of relay is used to switch ON the supply to the ignition coil of the vehicle. If the fingerprint is not matched BUZZER start sounding to indicate wrong operation. Apart from that, the remainder system is also provided such as AIR FILLING, VEHICLE INSURANCE, SERVICING etc. GSM MODEM is used to send SMS to the owner when his/her vehicle is in danger. LCD DISPLAY is connected to port0 of microcontroller which will continuously display the status and messages.



FLOWCHART:



COMPONENTS USED:

1. Microcontroller 89C51
2. LCD 16*2
3. MAX 232
4. GSM MODEM
5. TRANSISTOR BC 547
6. RESISTORS
7. CAPACITORS
8. CRYSTAL 12MHZ
9. RELAY
10. BUZZER

ADVANTAGES:

1. Its main advantage is its anti-theft feature.
2. It is a compact circuit which makes it very easy to install in the two wheeler.
3. It can be used in moped as well as in gear bikes.
4. Good maintenance of vehicle due to its remainder system.
5. Easy to use.

CONCLUSION:

Our proposed Two Wheeler Vehicle Security System is the advanced, reliable and robust version of security mechanism for two wheeler vehicles. The proposed security system also gives space, in terms of hardware and software, to add up custom applications to make the product even more user-friendly. Proposed TWVSS can be installed on two wheeler vehicle of any class or company, thereby creating a huge market for the product. Stress was laid in designing a cost efficient system so that it could also be even bought by the owners of the low end bikes. Small size of the module allows it to be placed under the seat of the vehicle, there by needing no physical changes to be done to the vehicle. We believe the frequency of the two wheeler vehicle thefts that are encountered these days could be highly suppressed by installing our proposed security system.

References

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