

Fingerprint and RFID Based Two-Wheeler Vehicle Ignition Systems

Shubham R. Kumbhalwar^{1*}, Avinash B. Gunale², Isaq N. Shaikh³, Prof. Kundankumar R. Saraf⁴

Department of Electronics and Telecommunication, Dr. D Y Patil School of Engineering Lohgaon, Pune, India

ABSTRACT

This project deals with Fingerprint and RFID based two wheeler vehicle ignitions system, it is used for security purpose of two wheeler vehicle. When fingerprint and RFID is authorized only then can start vehicle ignition. When we place our finger on fingerprint module, it cross check the images of fingerprint which are saved in its database and after fingerprint matches RFID Reader is on then signals goes to ATMEGA16 and this signals gives to the relay, relay becomes on then signals from relay gives to ECU system. Then our vehicle ignition starts.

Keywords : Fingerprint Technology, RFID Technology, Relay Technology, Main Unit, Engine Control Unit.

I. INTRODUCTION

Now a day's increased number of theft cases of the two wheelers there is need to increase the security level of the two wheelers. Generally used key locks available in the bikes are well known to the thieves and thus it can be easily unlocked by the professional thieves. By using master key it becomes very easy to unlock the lock of the bikes by the thieves. This creates new demands and provides an additional security level. The different and modern lock must be unique in itself i.e. it must be only unlocked by specific way. Increasing demands on performance, security, quality and cost are the main challenges for today's automotive industry. Coming to the security aspect, let us throw some light upon the statistics of automotive theft.

Fingerprint Sensor module is four pin electronic devices, which are used to apprehend a digitalized image of the fingerprint pattern. The apprehend image is called as a live scan Fingerprint Sensor Module has two sub modules: fingerprint Enrolment/Addition and Fingerprint Recognition. Fingerprint enrolment/addition module adds and

stores the fingerprints of all the users who are authorized to drive the vehicle. This sub-module enables fingerprint of valid user to be enrolled in the database. Fingerprint sensor Module R303A sends the signals to the microcontroller board.

ATmega16 microcontroller handles user authentication. Once the scanned fingerprint matched with the one stored in the database, the microcontroller sends the desired signal to put the vehicle in motion. This is accomplished by turning on and open the valve attached to the fuel tank. Whenever an unauthorized user tries to run the vehicle, his/her fingerprint mismatches the valve attached to the fuel tank shuts down or closes thus disallowing him/her access.

Generally RFID is automatic identification technology which is use radio frequency electromagnetic fields to identify objects carrying tags when they are come close to a reader. RFID tags generally feature an electronic chip with an antenna in order to pass information onto reader. The assembly is called an inlay and is then packaged in different forms to be able to withstand the

conditions in which it will operate. This product is known as a tag, label. RFID tag information is a unique identifier, once this identifier has been written.

II. METHODS AND MATERIAL

Our thesis work focus on developing methods to implement to start two wheeler vehicle ignitions.

Software

Dip Trace software is EDA/CAD software for creating schematic diagrams and printed circuit boards.

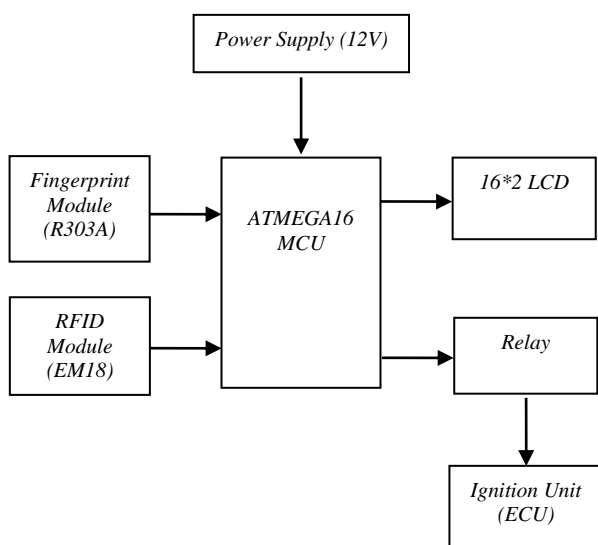
AVR Studio is multipurpose software it is used for coding of our program which is written in embedded c.

Hardware

PCB design implement using epoxy glass, epoxy glass is a transparent, hard and brittle substance that is derived from the polymerization of epoxies. It's used as a type of coating on metal surfaces to prevent corrosion.

ISP or In System Programming is the best way to program AVR microcontrollers as it allows them to be programmed in circuit. This project is easier for development, production and most importantly, for updating the firmware later in the field. The appliance used for this is an AVR ISP.

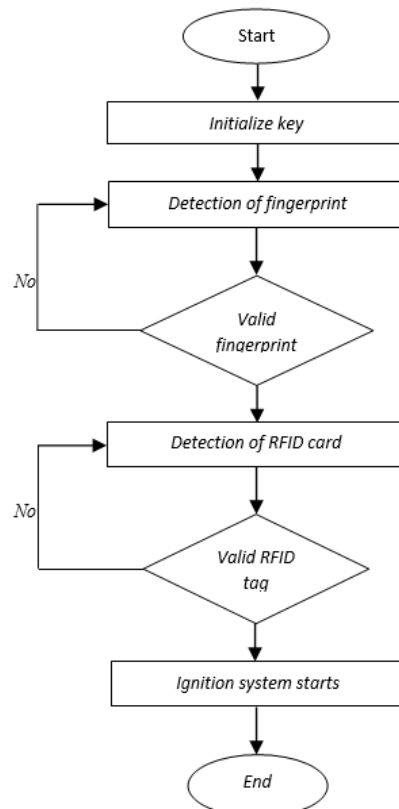
Block Diagram



In this block diagram there are two input giving sources i.e. fingerprint module and RFID reader module. They are used to provide digital data to microcontroller. Fingerprint module will sense the fingerprint of any person & automatically sends data to microcontroller. Microcontroller holds data that until second input. Generally RFID is automatic identification technology which is use radio frequency electromagnetic fields to identify objects carrying tags when they are come close to a reader.

RFID tags generally feature of an electronic chip with an antenna in order to pass information on to reader. This reader will send the information to the microcontroller then it will compare the both incoming signal with previous stored data. If all data matched then it will ON the relay, then automatically ignition unit start working it role and LCD will display the authorized person access the vehicle. If data doesn't matches then relay will OFF & microcontroller will denied the access of unauthorized person, so your bike will secured.

Flowchart



Algorithm

- STEP 1. Initialize the serial port communication.
- STEP 2. Place owner fingerprint in fingerprint module.
- STEP 3. Check the status of fingerprint if valid go to step 4, otherwise go to step 2.
- STEP 4. Show vehicle RFID tag card.
- STEP 5. Check the status of RFID card if valid go to step 6, otherwise go to step 4.
- STEP 6. Ignition start.

Advantages

1. The setup is cost friendly and reliable.
2. Increasing demands on performance, security, quality.
3. Keyless vehicles.
4. More security.
5. Easy to access vehicles.
6. Can be easily modified for improving the setup and adding new features.

Application

1. Automotive industries.
2. For every normal human being antitheft vehicles will be provided.
3. This project will be use in Domestic purpose.

Future Scope

1. Eye and voice recognition system for two wheeler ignition vehicles.
2. Pattern recognition in vehicle security.
3. Android based vehicle ignition.
4. By using fingerprint, after tilting the handle of vehicle automatic hand should be locked.

III. RESULTS AND DISCUSSION

The purpose of doing this project is to making every bike fully secured from thief and allowing it only for authentication. Due this it will have high security peak in society. Even though this project having efficient costing & time.

IV. CONCLUSION

In current process of implementing the project we learned that RFID and fingerprint technology has major Scope in improving ignition system, with the help of both this technology we will give new revolution in security area.

There are many improvements or functionalities that could be added on to the current version of this system to make it more efficient in terms of security and portability.

V. REFERENCES

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