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Helmet Integrated Bike with Fingerprint Ignition System

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ABSTRACT: India is having the highest rate of two wheeler accidents and most of them are fatal because of head injuries. These injuries could be reduced to a large extent by use of helmets. Thus it is suggested to wear helmet for every rider. In this work, we suggest a helmet integrated system with bike ignition which could ensure the use of helmet by the user. Furthermore, to enhance the security we use the specific feature of human i.e. unique fingerprint. So, identifying a person through fingerprint and implementing it for security will help a lot. The rising demand of security in two wheelers and the issues of lost keys could be resolved by this system.

Keywords: Fingerprint module, Microcontroller, Relay, LCD Display, Vehicle Security

I. INTRODUCTION

In today's scenario, the craze of two wheelers among young generation is continuously increasing but with the increasing number of two wheelers, the vehicle theft rates as well as the rate of accidents of such vehicles are also rising tremendously. The two wheeler riders involved in accidents generally undergoes fatal head injuries that may even cause death in some cases due to most common negligence of not wearing the helmet.

Biometrics refers to, "the automation identification of a living person based on physiological or behavioral characteristics for authentification purpose" (Omidiora, 2006). The rising graph of vehicle theft cases has forced us to enhance and replace the existing traditional key locks, which can easily be unlocked by the thieves. The fingerprint biometric system could be used for implementation with vehicles ignition system for enhancing security of vehicle, as finger prints of every individual are unique. Also, as handling and misplacing of keys is major issue which can be resolved by using such systems.

Here, we propose using a fingerprint authenticated vehicle starter system. The system provides the secure and easy way to start/stop vehicle engines. User just needs to scan finger to start the vehicle, no need to carry any key. The system allows only authorized user to start the vehicle, thus making system automatic as well as secure. Furthermore, a smart helmet integrated bike ignition system with fingerprint recognition needs to be developed to ensure riders security.

The fingerprint sensor reads the fingerprint which is interfaced with microcontroller AT328. A microcontroller enables the ignition system, if the matching between the scanned data and the existing data is correct. Fingerprint module itself compares the data and its output is given to microcontroller. Thus result is displayed over a LCD display (16x2) whether the user is authorized or not based on stored data. The helmet recognition is done by using RF Transmitter and RF receiver that uses RF signals at 433MHz. The RF receiver receives the signal and it generates another signal which is send to the ignition relay. If signal is one, then relay operates and ignition starts making vehicle ready to run.

Hence the proposed system aims to ensure security and safety of vehicle and the rider respectively.

II. OPERATION

For ensuring vehicles as well as the drivers safety, the approach for the design of Fingerprint recognition Based Ignition System with Helmet integrated Unit is of much importance. Firstly, The rider should wear a helmet to scan the fingerprint and then to ignite the engine. In Helmet, a RF Module of frequency 27 MHz is used. Whenever the rider wears the helmet, a push button is pressed and the signal is sent through RF transmitter to the RF receiver circuitry which further sends it to Ignition Relay. If the signal is high, the relay will operate and the signal is driven through the Driver IC to the Microcontroller. Thus, the circuit operates and the fingerprint module is ready to sense the fingerprint of authorized user. The user needs to scan his fingerprint on the module and the master fingerprint is assigned. Number of users fingerprints could be stored in the memory of module which can be assumed as the slave.

In order to start a vehicle, the authorized rider must scan his fingerprint on the sensor and put on the helmet over

his head, and if the fingerprint matches with the stored data, a "FINGERPRINT MATCHED READY TO START" message is displayed over 16x2 LCD display.
If the fingerprint doesn't matches with the stored data, the microcontroller pins are reset to zero Volt, and LCD displays "FINGERPRINT DOSEN'T MATCH UNABLE TO START" and then a message displays "TRY AGAIN".

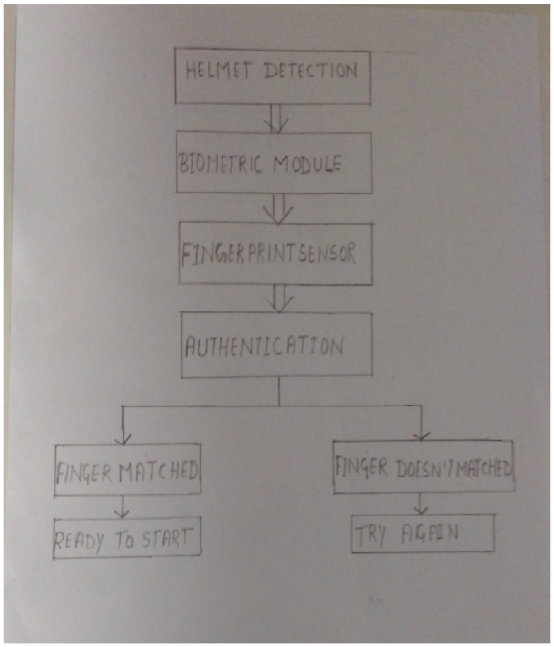

Fig. 1. Flowchart for Authentication.

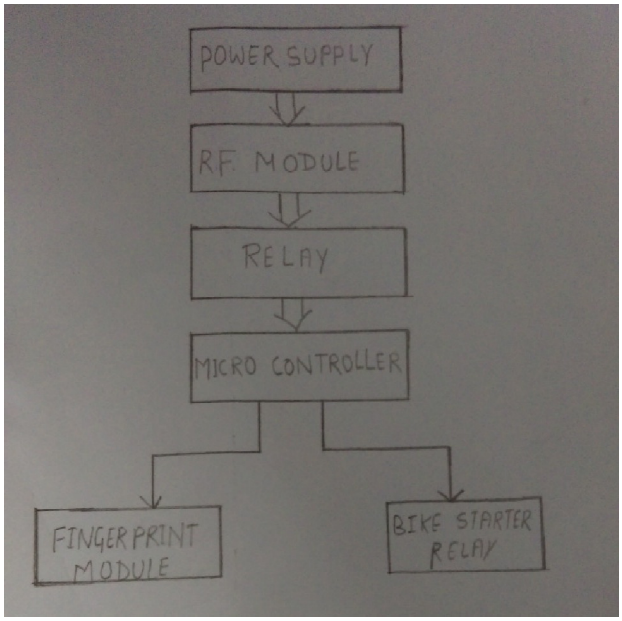

Fig. 2. Block diagram for bike ignition.

III. COMPONENTS SPECIFICATION:

1:-Fingerprint Module (R305):-

Fig. 3. Fingerprint Module (R305).

1. Fingerprint sensor type-Optical
2. Sensor life-100million times
3. Storage capacity-250
4. Resolution-500DPI
5. Voltage-3.6-6.0VDC
6. Scanning speed-0.5sec
7. Verification speed-0.3sec

2:- Microcontroller (ATmega328P):-

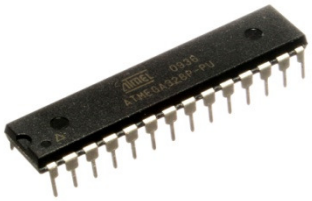

Fig. 4. Microcontroller (ATmega328P).

1. Pin count-28.
2. Maximum operating frequency-20MHZ.
3. CPU type-8bit AVR.
4. Flash memory-32KB.
5. Maximum i/o pins-26.

3: RF Module

1. Frequency -27MHZ.
2. Supply voltage (Transmitter)-12V.
3. Supply Voltage (Receiver)-3V.
4. Distance-50m.

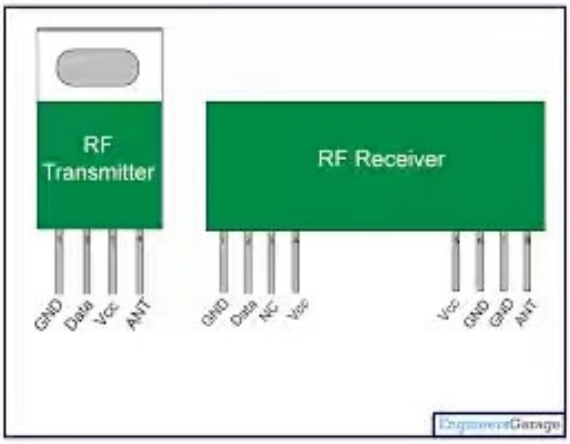

Fig 5. RF Transmitter and Receiver.

IV. SCOPE

Further advancements in the proposed system could be made by integrating more safety features such as alcohol detection system, fall detection system, keypad ignition system, over speed alarm system etc. in order to ensure safe and enjoyable ride.

V. CONCLUSION

Thus the cheap, secure and user friendly Vehicles Ignition System based on Biometric identification ensures the vehicles security by allowing selected users and also resolving the issue of carrying the keys or problems caused by losing them. Also, the Helmet Recognition System integrated with vehicles Ignition system ensures the riders safety.

REFERENCES

[1]. http://www.ijirst.org/articles/IJIRSTV2I12043.pdf
[2]. http://www.ijceronline.com/papers/Vol2_issue2/E022236243.pdf
[3]. https://en.wikipedia.org/wiki/Ignition_system
[4]. http://www.ijcea.com/wp-content/uploads/2015/10/03-Roopam-Arora.pdf
[5]. https://www.researchgate.net/publication/230634231_A_Prototype_of_a_Fingerprint_Based_Ignition_Systems_in_Vehicles
[6]. https://www.scribd.com/document/300570225/FINGERPRINT-BASED-IGNITION-SYSTEM-01-docx
[7]. Omidiora E. O "A Prototype of a Fingerprint Based Ignition Systems in Vehicles" *European Journal of Scientific Research* ISSN 1450-216X Vol. **62** No.2 (2011), pp. 164-171
[8]. **https://en.wikipedia.org/wiki/Biometrics**