



International Journal of Marketing Management

ISSN 2454 - 5007



www.ijmm.net

Email ID: editor@ijmm.net , ijmm.editor9@gmail.com

Smart Helmet with Rider Safety System

Upendra Prasad¹, Amit Kushwaha², Rukmani Chauhan³, Vaibhav Jaiswal⁴, Divyangi Nigam⁵, Nidhi Ojha⁶, Karunakar Singh⁷

Abstract: Motorcyclists who are involved in high-speed accidents without a helmet are at risk of death. It's possible that a helmet could save a person's life by reducing the force of the collision. Many countries mandate motorcycle riders to wear helmets while on the road, such as Malaysia, which enforces this rule. A smart helmet is a novel invention that makes motorcycle driving more secure than ever before. GSM and GPS are used to make this happen. Vibration sensors are put in various parts of the helmet where there is a greater chance of being hit, and these sensors are coupled to a microcontroller board. There are sensors in the helmet that are activated when a cyclist is in an accident, and these sensors send data to a microcontrollerboard, which extracts GPS data from the GPS module that is attached to it. GSM module automatically sends a message to the ambulance or family members if the data exceeds the minimum stress limit. In addition, the vehicle contains an alcohol detecting sensor that can tell whether a driver is intoxicated and shut off the engine.

KeyWords: MQ3 Gas sensor, RF Transmitter and Receiver System, encoding/decoding IC.

I. INTRODUCTION:

Whether it's human life or material possessions, safety and security have always been top priorities, and that hasn't changed. As many as 1.65 lakh vehicles were stolen in a single year in 2013 despite law enforcement organizations' assertions of effectiveness in reducing automobile theft. It is unfortunate that Uttar Pradesh has the distinction of having the most reported occurrences of vehicle theft in the country. Additionally, the alarming rise in two-wheeler traffic accidents has been a global issue because they are physically exposed and in direct contact with the road. Contact with the impacting vehicle or accidents being the carelessness of the riders

or rash driving of the rider or riding vehicle when high on alcohol.

1.1. Motivation

We were inspired to start this project because of all the difficulties we encounter on the roadways every day. Every day, more and more individuals are being killed on the roads because they don't wear helmets, especially in nations like India, where bicycles are more common. We see a lot of two-wheeler-related fatalities in the current climate. People aren't wearing helmets despite the fact that they are readily available. Emergency contacts are notified via GSM if a car accident occurs.

^{1,2,3,4} Student of B. Tech Final year, Dept. of Mechanical engineering, Rameshwaram Institute of Technology and Management, Lucknow

^{5,6} Assistant Professor, Dept. of Mechanical engineering, Rameshwaram Institute of Technology and Management, Lucknow

⁷ Assistant Professor & Head of Department, Dept. of Mechanical engineering, Rameshwaram Institute of Technology and Management, Lucknow

1.2. Problem Definition

As the number of motorcyclists in our nation grows, so does the number of road accidents, many of which are caused by the most common form of negligence: not wearing a helmet. In addition, many deaths occur because the injured person does not receive the immediate medical attention he or she needs. The goal of the initiative is to protect bikers from traffic accidents.

II. LITERATURE SURVEY

Achint Agarwal et. al. The safety of both the rider and the two-wheeler is a top priority for the authors, who stress the importance of both. With the use of biometrics, authors have proposed a prototype system that enhances two-wheeler security.

The equal integration of the aforementioned components was the primary concern while designing the bike anti-theft system. In order to prevent the car from theft, two layers of anti-theft protection have been implemented. The vehicle's access is restricted to only those who have been pre-registered in the database, and their fingerprints are cross-checked with the database at the moment of admission.

Aman Mishra et. al, the authors have laid emphasis on reducing the number of accidents caused by the carelessness of the riders (i.e. driving in a drunken condition or not wearing a

While riding a two-wheeler, wear a helmet. An electrical technology has been implemented by writers that does not make it simple to break the rule of wearing a helmet and abstaining from alcohol while riding.

It's revealed in the book that while the lack of deterrence has given thieves the confidence to bypass vehicle security systems (using duplicate keys, for example), riders' lack of awareness and carelessness puts them at risk of being killed in crashes (which by fluke are survived only by few of the victims of such accidents).

R. Prudhvi Raj et. al. They focused their research on figuring out why two-wheeler drivers don't want to wear helmets when they're out on the road.

The authors drew attention to the rise in the number of people killed in traffic incidents involving two-wheelers. Injuries to their heads were the primary cause. People aren't wearing helmets despite the fact that they are readily available.

Excessive heat generated within it was a major factor in the decision to remove it. The authors have created a working prototype that incorporates a thermoelectric effect-based peltier module as well as a GPS module for tracking the vehicle's exact location.

Shanmuganathan J et. al. In today's vehicle industry, security and theft prevention are two of the most important aspects. This article uses GSM, GPS, and Android technology to prevent two-wheeler theft. This system allows for the tracking and monitoring of a vehicle. As many as cars are stolen around the world every year, despite the many new technologies that have been deployed in recent years to prevent and trace car thefts. NCIC reports that 1,192,809 automobiles were reported stolen in 2006 with a total loss of \$7.9 billion. As part of this project, a security system is being developed to track and monitor automobiles as well as to stop a stolen vehicle and locate it online in the event it is recovered. Embedded and communication technologies from the current period are combined in this system. Akash Ret. al. Two-wheeled vehicles face a number of challenges in today's world. Accidents resulting from alcohol intake by the rider and the non-wearing of a helmet, as well as fuel theft, car theft, and other factors More than 1.37 lakh persons were killed in road accidents in India in 2013, and 25 percent of the deaths were attributed to two-wheelers, according to a 2013 survey. Prototype helmet modules that can be modified to monitor the rider's access are presented in this study. A GPS locking system and an alcohol detector are also included in the prototype. The alphanumeric fuel gauge provides precise data on

the amount of fuel in the tank and provides an estimate of how far the vehicle can travel on the current level of fuel. There has been an increase in accidents without a helmet because of the rider's lack of attention, which is monitored by the proximity sensor. S. Priyadarshiniet. al. Using GSM, GPS, and Android technology, the author developed a two-wheeler theft prevention system. The two-wheeler can also be tracked, monitored, and stopped by the suggested system. The GPS module acquires the two-location

wheeler's and transmits it to the microcontroller, which in turn sends the message to the user's smart phone through GSM. PIC microcontroller, air solenoid and water solenoid valves, and GSM modem and GPS module are all connected to the two-GSM wheeler's and GPS modules in this example. A mobile application for Android allows the user to prevent the theft of a vehicle. Android-based tracking and theft prevention systems are included in the article.

III. **EQUIPMENT-**

1. **TRANSMITTER.:** Transmitter Produced Radio frequency withan Antenna andtransmitRFsingleto receiverare done at433MHzFrequency.



a) **TransmitterCircuit**



b) **SolarPlate:-it convert solarenergyintoelectrical energy.**



c) **ChargingConnector:-itisusedto charge thebattery.**



d) **Battery:-Battery is used for to store the energy that use when bike run in night.**

e)

Push Switch.



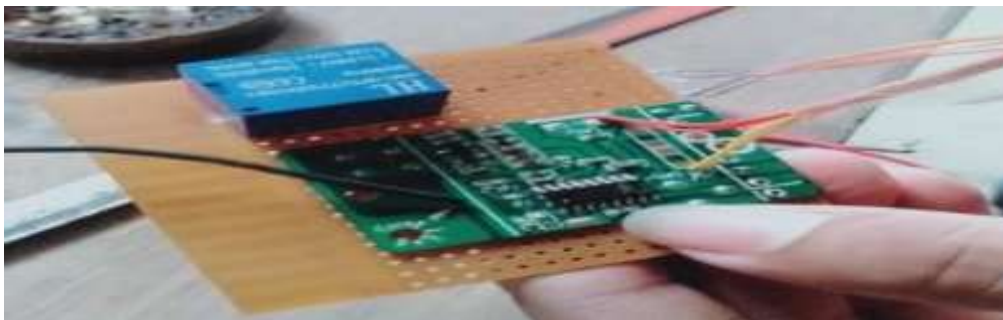
2. **RECIVER.**

a) **Receiver Circuit**



b) **5 volt DC relay:-Relays use as a switching purpose.**

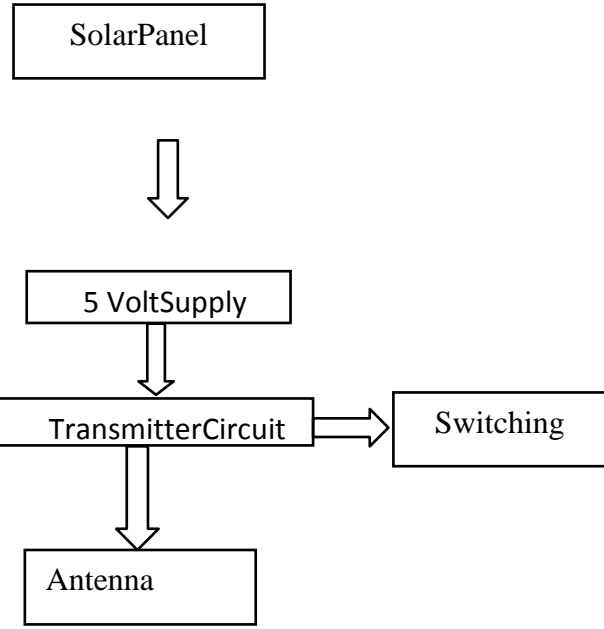
c) **12 volt to 5 volt converter**



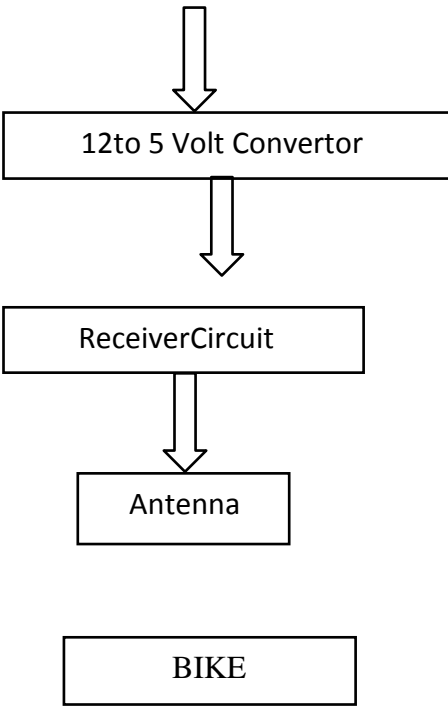
d) **PCB:-Printed circuit board is place where we solder the all electrical parts.**

CONSTRUCTION

This article can be downloaded from <http://www.ijmm.net/currentissue.php>



Flow Chart of Transmitter



Flow Chart of Receiver

V. WORKING

Before the car can be started, the helmet and the alcohol level must be checked. The two-wheeler will not start unless the rider is wearing a helmet when the ignition is turned on. Once the rider's head is detected by the IR Sensor. HT12E encoder IC HT12E will receive a strong pulse from the sensor. A 433 MHz RF signal is transmitted from the transmitter using the encoded output. Within the helmet, the microcontroller, ir sensor encoder, and transmitter are located.

As soon as we put on our helmets, we press the push switch, which causes the circuit to transmit an RF signal to our reception system, which is powered by a 5 volt lithium battery.

When the transmitter generates radio frequency (RF) signals, the receiver with an antenna picks up the RF signals and sends them to the bike's ignition system, where they ignite the fuel and get the bike going.

VI. CONCLUSION

To reduce the frequency of injuries caused by helmet skipping on a two-wheeler, this smart helmet has been developed. People who want to operate the vehicle will have to do so after donning the helmet, if this concept is put into production. After the proposed government-mandated helmet initiative is implemented successfully, the number of traffic accidents will drop dramatically. Safety and security on a two-wheeled vehicle can be improved by the use of this helmet.

A safe two-wheeler travel can be achieved by executing this project, which would lessen head injuries during accidents and also reduce the number of accidents caused by driving a bike while intoxicated. The helmet may not be foolproof, but it is the rider's first line of defense against life-threatening injuries in the event of an accident.

VII. APPLICATIONS

VIII. First, it can be employed in a real-time safety system.

IX. A small VLSI chip can be used to integrate the circuit into the helmet or bike.

X. It's possible to create a safety system that uses less power.

XI. The seat belt can be used in place of the helmet in a car or other vehicle to further enhance this safety system technology.

XII. FUTURESCOPE

The government should permit further advancement of this project and subsidise it so that it is affordable to everyone. Helmets for two-wheeled vehicles should be incorporated into the vehicle design. Using unique codes, fingerprint sensors, an alarm system, and other methods, this helmet can be protected from theft. This helmet can be outfitted with a speed-monitoring device. Ventilation holes can be added to a helmet to avoid the most common complaint of asphyxia.

References

ADVANCED FINGERPRINT AUTHENTICATION SYSTEM IN TWO WHEELERS, International Journal of Technical Research & Applications, by VaishnaviKhadsane, Mrunalini Desai, DevashreeKhatvakar, and Shruti Lad (March 2016).

S. Prakash and S. Raguvaran "Review of Bike Security System Using Fingerprint, GPS and GSM" in the International Journal of Innovative Research in Computer and Communication Engineering (March 2015).

"Two Wheeler Vehicle Security System," International Journal of Engineering Sciences and Emerging Technologies (IJESSET), Volume 6, Issue 3, December 2013.

IJECSCSE, Volume 1, Issue 1, 2011, Santhosh B. Patil and Rupal M. Walli, "Design and Development of completely Automatic AT89C52 Based Low Cost Embedded System for Rail Tracking," Vol. 1, Issue 1, 2011.

"Using Fingerprint Authentication to Reduce System Security; An Empirical Study," by Hugh Wimberly and Lorie M. Liebrock, was presented at the IEEE Symposium on Security and Privacy in 2011.

ALCOHOL DETECTION USING SMART HELMET SYSTEM", International Journal of Emerging Technology in Computer Science and Electronics (IJETCSE), ISSN: 0976-1353 Volume 8 Issue 1 – APRIL 2014.

Accident Detection and Reporting System Utilizing a Smart Helmet Using GSM and GPS Technology, International Journal of Electrical and Electronics Research, Volume 2, Issue 4, Pages 122-127, October - December 2014

A two-wheeler security and alert system, Krutika Naidu, DiptiBichwe, and AboliNikode, International Journal of Innovations in Engineering Research and Technology [IJIERT], Volume 2, Issue 1, January 2015 (ISSN: 2394-3696).

For an accident reporting system, "Smart Helmet Using GSM and GPS Technology," International Journal of Engineering, Manjesh N, and Professor Sudarshan Raj, "Smart Helmet,"

Scientific Research and Development (IJSRD) ISSN: 2248-9622 Conference on Engineering Science Advances and Trends, 2015.

Teena P John and Nimmy James' "Alcohol Detection System" appeared in the International Journal of Research on Computer and Communication Technology, Vol. 3, Issue 1, January 2014.

Second, "A Review of Bike Security System Using Fingerprint GSM and GPS," was published in the International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE), Vol 3, Issue 3, March 2015.

A Fingerprint Authentication System for Two-Wheeled Vehicles: A Review, International Journal of Technical Research and Applications (e-ISSN: 2320-8163),

www.ijtra.com, Special Issue 40 (KCCEMSR) (March 2016).

4 AchintAgarwal, AmitSaxena, Akansha Rajput, Aman Bhatia, Aman Mishra, "A RETROSPECTIVE STUDY OF TWO WHEELER ANTI-THEFT AND RIDER SECURITY SYSTEM", "International Journal of Scientific Research & Management Studies(IJSRMS)" volume 3 issue 3, October 2016.

Five researchers, "A study of two-wheeler and rider safety system", Imperial Journal of Interdisciplinary Research (IJIR), Vol. 2, No. 11, 2016, Aman Mishra, AmitSaxena, Akansha Rajput, Aman Bhatia, AchintAgarwal.

Issn 2231-1297, Advance in Electronic and Electric Engineering, Vol. 4, No. 5, 2014, pp. 493-498 R. Prudhvi Raj, Ch. Sri Krishna Kanth, A. BhargavAditya and K. Bharath "Smart-tec Helmet".

A Two-Wheeled Vehicle Tracking and Theft Prevention System Using Android, International Journal of Engineering Trends and Technology (IJETT), Volume 21 Number 7, March 2015, Shanmuganathan J and B.C.Kavitha.

8) Akash R. and D Vishwadhara D. R. and Sapna L., "Accessing System for Two-Wheeler and Improved Road Safety (ASTIR)", International Journal of Advanced Research in Electronics and Communication Engineering (IJARECE), Volume 5, No. 4, April 2016."Tracking and Theft Prevention System for Two-Wheelers Using GSM and GPS," International Journal for Research in Applied Science & Engineering Technology (IJRASET), Volume 4 Issue IV, April 2016, by N. Anupriya, S. Uma Maheswari, and S. Sellam