

# Smart Helmet Reporting System

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**ABSTRACT:** This project is used to increase the safety for two wheelers. This project has two units one is a helmet unit another is a vehicle unit. In a helmet unit is there is a sensor (Limit switch) and alcohol sensor that is used to detect that the driver is wear the helmet properly or not. Then this information is transmits to the vehicle unit through the RF transmitter. Encoder is used to encode the information. If the alcohol sensor detects that the driver drunk means raspberry pi microcontroller to information is transmits to the vehicle unit through the RF transmitter then automatically stops the vehicle by means of control the relay through Driver circuit. The vehicles will be monitored frequently to avoid the alcohol consumption. While driving if the person driving the vehicle drunk alcohol it will be monitored it will automatically ON the buzzer. It will OFF the vehicle key.

**KEYWORDS:** Limit Switch, Alcohol Sensor, Encode, Vehicle drunk alcohol.

## I.INTRODUCTION

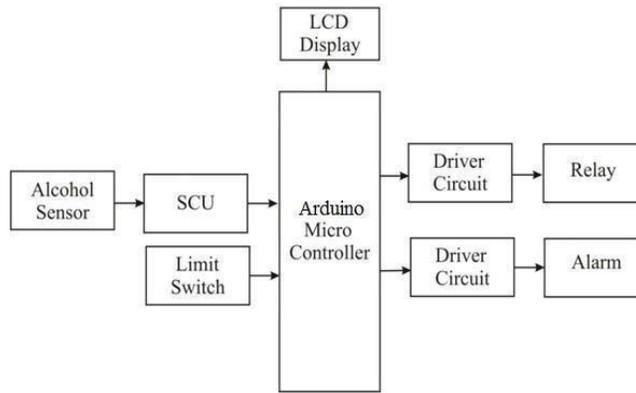
The growing population the use of vehicles has become superfluous .and this has led to increase the traffic hazards and the road accidents, which causes huge loss of life because of the poor emergency facilities. The purpose of the project is to find the vehicle where it is and locate the vehicle by means of sending a message using a system which is placed inside of vehicle system, Most of the times we may not be able to find accident location because we don't know where accident will happen. When a vehicle meets with an accident immediately Vibration sensor will detect the signal, and sends it to Arduino microcontroller. Microcontroller sends the alert sounds indicate in to the police station or a rescue team. So the police can immediately trace the location through the smart phone modem after receiving the information. The exactness and accuracy in this system are high, which demonstrates that our proposed system is precise in recognizing accidents by using the vibration, load monitoring, MEMEs and high alcohol consumption. The comparison of the parameters for accident detection shows the importance of the use of helmet. A tendency to develop an electronic smart helmet system that efficiently checks the wearing of helmet and drunken driving. By implementing this system a safe 2 wheeler journey is possible which would decrease the head injuries throughout accidents caused from the absence of helmet and additionally reduce the accident rate due to drunken driving. To detects if one is wearing a helmet or not. It also detects occurrence of any accidents and overconsumption of alcohol. The system for Design of rapid first- I aid alert systems for 2-wheeled I vehicles via smart phones inertial I sensors.

## II.EXISITING SYSTEMS

This project is to design the project for provide high safety in automobiles. This is done with the help of embedded technology. This project is used to increase the safety for two wheelers. This project has two units one is a helmet unit another is a vehicle unit. In a helmet unit is there is a sensor (Limit switch) that is used to detect that the driver is wear the helmet properly or not. Then this information is transmits to the vehicle unit through the control unit to information.

In a vehicle is helmet control unit to this signal and give it to the arduino. After the controller this information

given to the checking purpose. Microcontroller checks this information if the helmet properly wears means it allowed to on the vehicle otherwise it turns of the relay to stop the vehicle.



**Fig 1 Block Diagram**

Another limit switch is used to detect the drivers position. If the alcohol sensor detects that the driver drunk means arduino microcontroller automatically stops the vehicle by means of control the relay. Driver circuit is used to control the relay due to the signal from the traffic unit.

An important part of the accidents happens because the individual was either not wearing a helmet, or the accident was not revealed in time, or the person couldn't be safe in view of the late induction to an emergency clinic, or on the grounds that the person was riding while smashed. Sensors distributed, Wi-Fi empowered processor, and computing foundations are used for building the structure.

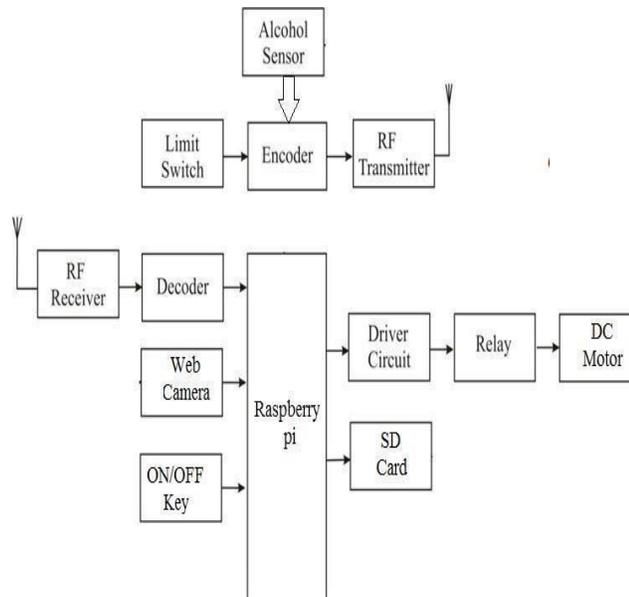
The accident discovery is finished utilizing the accelerometer and the accident warning is finished utilizing the customer and server- based framework where the microcontroller is the customer and the server is an online administration. At the point when an accident happens, the related subtleties are sent to the crisis contacts by using a cloud-based administration.

The disadvantages of existing system are 1) Less exactness in the location of accidents, and 2) There is no framework to check if the rider is wearing the helmet or not. IR sensor, load sensor, vibration sensor and gas sensor, mems.

The gas sensor detects the measure of liquor consists in the breath of a person wearing the helmet. The Alcohol recognition sensors connected with the helmet in distinguish the Alcohol detection. MEMS based handle bar control of the vehicle. The Vibration sensor is used to detect any accident. Load checking to recognize the load of the vehicle and alongside the sensor to locate the quantity of individuals travelling in the bike. These parameters are used to keep away from accidents in bike.

### III.PROPOSED SYSTEM

This project is used to increase the safety for two wheelers. This project has two units one is a helmet unit another is a vehicle unit. In a helmet unit is there is a sensor (Limit switch) and alcohol sensor that is used to detect that the driver is wear the helmet properly or not. Then this information is transmits to the vehicle unit through the RF transmitter. Encoder is used to encode the information. If the alcohol sensor detects that the driver drunk means raspberry pi microcontroller to information is transmits to the vehicle unit through the RF transmitter then automatically stops the vehicle by means of control the relay through Driver circuit. If the driver drink while driving the bike the buzzer will be ON and it will create high sound and it will give the commend to stop the bike.



**Fig 2 Block Diagram of Smart Helmet**

It compulsory to wear Helmet without Helmet ignition switch cannot ON. It consists of RF transmitter and RF receiver system. As user wear Helmet RF signal radiate from transmitter and once these RF signal get sensed by the placed in the ignition switch of the bike. Bike will get start. The project is expected to improve safety and reduce accident and restricted the high speed by government especially fatal to the motorcyclist. With the increasing buying power of common man today the number of vehicle we are used but today's era, especially in the young generation, the craze of motorbikes is really remarkable.

The middle class families prefer to buy motorbikes over four wheelers because of their low prices. As the biker in our country are increasing the road mishaps are also increasing day by day due to which many deaths occur most of them are caused due to most common negligence of not wearing the Helmets and reaching the high speed.

This motivates us to think about making a system which ensures safety of biker by making it necessary to wear Helmet as per government guidelines. Presented a system on micro controller based circuitry is used with using GSM (Global System for Mobile Communication) GSM perform two way communication with bike and rider using GSM modem is used for sending SMS as on rider regular cell-phone also the system used siren and stand sensor in case someone try to bike steal the siren is ON even if user used very high speed at that time GSM send the SMS to government to avoid an accident.

#### IV.HARDWARE SPECIFICATIONS

- Raspberry Pi
- RF Transmitter and Receiver
- Limit Switch
- Alcohol Sensor
- Web Camera
- Power supply
- Relay Circuit

#### Raspberry pi

The Raspberry Pi is a credit-card sized computer that plugs into your Tv and a keyboard, which can be used for many of the things that your average desktop does – spreadsheets, word-processing, games and it also plays high-definition

video. The Raspberry pi charitable foundation wants to see the device being used by kids all over the world to learn programming and electronics.

### RF Transmitter and Receiver

Radio frequency (RF) radiation is a subset of electromagnetic radiation with a wavelength of 100km to 1mm, which is a frequency of 3 KHz to 300 GHz, respectively. This range of electromagnetic radiation constitutes the radio spectrum and corresponds to the frequency of alternating current electrical signals used to produce and detect radio waves. RF can refer to electromagnetic oscillations in either electrical circuits or radiation through air and space.

### Limit Switch

The switch, which is one of the most basic of all sensors, comes in two normally open and normally closed. Prior to advances in sensor technology, Mechanical switches were used extensively in control applications. Due to improved reliability and performance, mechanical switches are still used for this purpose, but they are primarily used where switch actuation and wear are minimal.

The standard limit switch is a mechanical device that uses physical contact to detect the target. A typical limit switch consists of a switch body and an operating head. The switch body contains electrical contacts to energize or de-energize a circuit.

### Alcohol sensor

Blood alcohol content (BAC), also called blood alcohol concentration, blood ethanol concentration, or blood alcohol level is most commonly used as a metric of alcohol intoxication for legal or medical purposes.

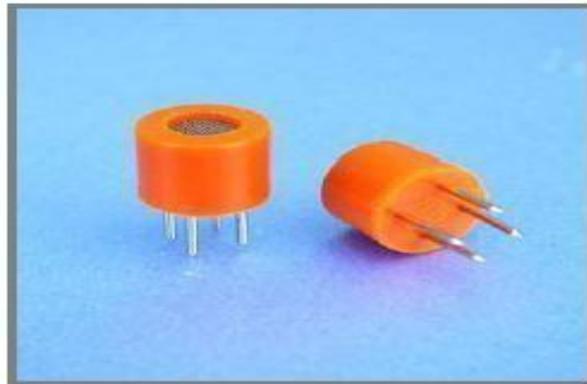


Fig 3 Alcohol Sensor

### Web Camera

A webcam is a video camera that feeds its images in real time to a computer or computer network, often via USB, Ethernet, or Wi-Fi. Their most popular use is the establishment of video links, permitting computers to act as videophones or video conference stations. The common use as a video camera for the World Wide Web gave the webcam its name. Other popular uses include security surveillance, computer vision, video broadcasting, and for recording social videos.

### Power supply

The ac voltage, typically 220V rms, is connected to a transformer, which steps that ac voltage down to the level of the desired dc output. A diode rectifier then provides a full-wave rectified voltage that is initially filtered by a simple capacitor filter to produce a dc voltage. This resulting dc voltage usually has some ripple or ac voltage variation.

### Relay Circuit

This circuit is designed to control the load. The load may be motor or any other load. The load is turned ON and OFF through relay. The relay ON and OFF is controlled by the pair of switching transistors (BC 547). The relay is connected in the Q2 transistor collector terminal. A Relay is nothing but electromagnetic switching device which consists of three pins. They are Common, Normally close (NC) and normally open (NO).

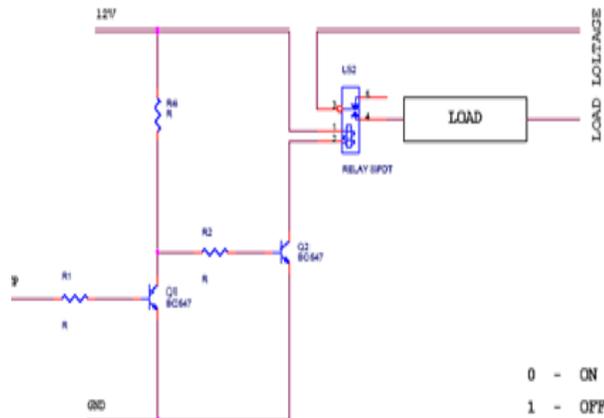


Fig 4 Relay Circuit

### 5 SYSTEM IMPLEMENTATION

The transmitting side of the helmet is connected to the receiving side of the Raspberry pi Module and the receiving side of the raspberry pi is connected to the transmitting side of the GSM Module. The power supply is given to the raspberry pi. From the Raspberry pi the power is distributed to all other components. The output pin of the alcohol sensor is connected to the eighth pin of the Raspberry pi. Each component are connected and controlled by the Raspberry pi.

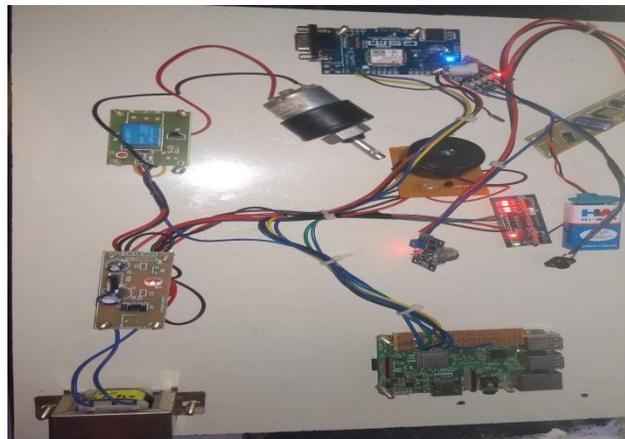


Fig 5: Top view of proto type system

### 6 RESULT AND DISCUSSIONS

Limit switch is fixed in the helmet with is pressed while wearing the helmet. It transmits signal to the receiver in the micro controller. It helps us to identify whether the driver has wore the helmet are not. The vehicles will be monitored frequently to avoid the alcohol consumption. While driving if the person driving the vehicle drunk alcohol it will be monitored it will automatically ON the buzzer. It will OFF the vehicle key.



**Fig 6 Raspberry pi**

## VI.CONCLUSIONS

The government has taken initiative by making compulsory Helmet and NO Drink and Drive. According to analysis only 10% bike riders follows these rules. Many a times these rules are violated. The previously developed Helmet only detects the presence of helmet and not the alcohol. The proposed system provides a “Smart Helmet” which detects the alcohol consumed by the rider and whether the rider has worn the helmet or not. This system consists of an android application. The result obtained from the sensors i.e. IR Sensor for Helmet detection and MQ303A for alcohol detection will be analyzed on the smart phone Hopefully the proposed system will provide the rider’s safety and restrict Drink and Drive condition and the traffic rules will also be followed.

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