Smart Helmet with Alcohole Detection

Prof. P.E.Bachche[1], Siddhi maheshkumar Shinde[12], Aditya joteeram Patil[3],
Akash Ramchandra Mulik[4],Mayuresh satish shinde[5]

[1]*Lecturer, Department of Electrical Engineering, Tatyasaheb Kore Institute of Engineering and Technology Polytechnic, Warananagar, India*

[2,3,4,5,6] *Student, Department of Electrical Engineering, Tatyasaheb Kore Institute of Engineering and Technology Polytechnic, Warananagar, India*

Abstract—**A smart helmet is a type of protective headgear used by the rider which makes bike driving safer than before. The main purpose of this helmet is to provide safety for the rider.This can be implemented by using advanced features like alcohol detection, Bluetooth system, helmet bike lock system and using solar plate.This makes it not only a smart helmet but also a feature of a smart bike. It is compulsory to wear the helmet, without which the ignition switch cannot turn ON An RF Module can be used as wireless link for communication between transmitter and receiver. If the rider is drunk the ignition gets automatically locked.**

Index Terms—**Smart helmet, MQ3 sensor, RF module,Relay, Alchole sensor**

I. INTRODUCTION

In recent times helmets have been made compulsory in Maharashtra State. Traffic accidents in India have been increased every year. As per Section 129 of Motor Vehicles Act, 1988, every single person riding a two- wheeler is required to wear protective headgear following the standards of BIS (Bureau of Indian Standards). Also, drunken driving under the influence (DUI) is a criminal offence according to the Motor Vehicle act 1939, which states that the bike rider will get punishment Currently bike riders easily escape from the law [1]. These are the three main issues which motivates us for developing this project. The first step is to identify whether the helmet is worn or not. If helmet is worn then ignition will start otherwise it remains off for this, Force Sensing Sensor (FSR) sensor is used. The second step is alcohol detection [2]. Alcohol sensor is used as breath analyser which detects the presence of alcohol in rider's breath and if it exceeds permissible limit ignition cannot start. It will send message to the number saying that "Rider is drunk and is trying to ride the bike". MQ-3 sensor is used for this purpose. When these two conditions are satisfied then only ignition starts. The third main issue is accident and late medical help. If the rider has met with an accident, he may not receive medical help instantly, which is one of the main reasons for death. Every second people die due to delay in medical help, or in the case where the place of accident is unmanned. In fall detection, we place accelerometer in the bike unit. By this mechanism accidents can be detected.

The aim of this project is to make à protection system in a helmet for the safety of bike rider. The smart helmet that is made is fitted with different sensors responsible for detection [3]. There are two main units in this project. Each unit uses a microcontroller. Signal transmission between the helmet unit and bike unit is done using a RF module.

II. LITERATURE REVIEW

The main reason for deaths happening in our country is the road accident, which is not recovered by the police immediately. So, the nearby police department should be notified immediately so that the police urge them to take to the Content from this work may be used under the terms of theCreativeCommons Attribution 3.0 licence.

Any further distribution of this work must maintain attribution to the author(s) and the title of the work, journal citation and DOI. Published under licence by IOP Publishing Ltd nearby hospital

In this paper it is clearly listed, that one of the main reasons for the road accidents is the alcohol consumption of the person. Careless driving of the rider can also be taken as a consideration for the road

accident too rectify that IR sensor is used to detect the obstacles to keep the rider in a safe zone

This paper put forth the solution for the safe driving of the rider the smart helmet consists of breath alcohol sensitizer to know the state of mind and the alcohol consumption of the rider. Suppose if the person is listening to the music using smart mp3 player where the sound can be

adjusted automatically for the safety precautions of the rider

Wearing helmet is a must during driving. So to notify the people with the automatic SMS, a relay should be connected along with the receiver module where the signal is transmitted from the transmitter of the helmet

The author's idea was to pre-check the rider for alcohol consumption and also to insist the rider to put on the helmet. The bike would not be started if these pre-conditions fail. If the person met with the accident with the help of GPS and GSM module the message will be sent to the family members and nearby hospitals.

This paper has clearly explained about the detection, the smart helmet has vibration sensor to detect the accident

by checking the assaimed threshold value and it automatically sends message to the relatives and ambulance
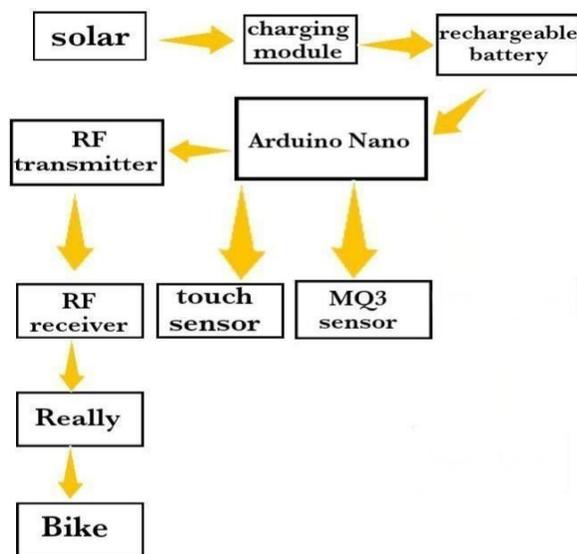
III. BLOCK DIAGRAM

Fig: block diagramof Smart helmet with alcohole detection

IV. SPECIFICATION OF EQUIPMENTS

1. ALCOHOL SENSOR – MQ3

Fig-MQ3 Alchole Sensor

MQ3 Alcohol Gas Sensor detects the concentrations of alcohol gas in the air and ouputs its reading as an analog voltage. The sensor can measure concentrations of 0.04mg/L to 4mg/L. The concentration sensing range is suitable for breathalyzers

2. BATTERY – 4V / 1.5AH

Fig- Battery

A battery is a device that converts chemical energy contained within its active materials directly into electric energy by means of an electrochemical oxidation-reduction (redox) reaction
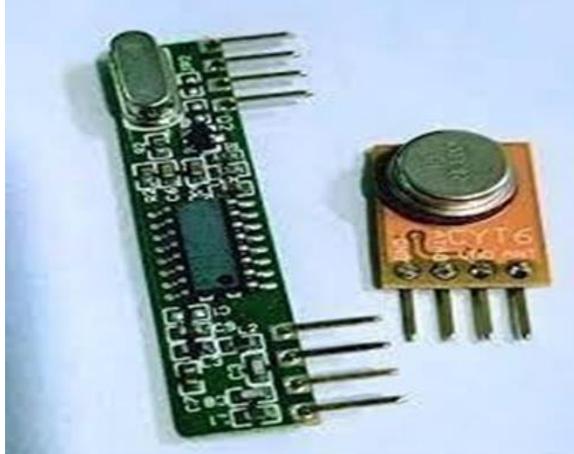
3. RF MODULE TRANSMITTER/ RECEIVER - 433MHZ

Fig-RF MODULE TRANSMITTER/ RECEIVE

RF 433MHz is a pair of electronic RF transmitter and receiver module use to send and receive radio signals between any two devices. The data is sent by the transmitter module from the transmitter end, and it received by the receiver module at the receiver end.

4. RELAY

Fig- Relay

A relya is an electrically operated switch. It consists of set of input terminal for a single or multiple contrl signals, and a set of operating contact terminals. The switch may have any number of contacts in multiple contact forms, such as make contacts, break contacts, or combinations thereof.

V. ADVANTAGES

1) Detection of accident in remote area can be easily detected and medical services provided in short time
2) It will reduce the probability of accidents by simply avoiding drunken drive by using alcohol detector.

VI. CONCLUSION

The Smart Helmet with Alcohol Detection is an innovative solution aimed at enhancing road safety and reducing accidents caused by drunk driving. By integrating alcohol sensors, smart locking mechanisms, and communication technologies, this system ensures that a rider under the influence of alcohol cannot start their vehicle.

Additionally, features such as GPS tracking, emergency alerts, and loT connectivity further improve safety and convenience.

This technology has the potential to significantly lower accident rates, promote responsible driving habits, and provide law enforcement with a reliable tool for monitoring road safety. While challenges such as cost, user acceptance, and sensor accuracy need to be addressed, continuous advancements in technology can lead to widespread adoption.

Overall, the Smart Helmet with Alcohol Detection is a step toward a safer and more responsible transportation system, ultimately saving lives and reducing injuries on the road

VII. FUTURE SCOPE

1.We can implement various bioelectric sensors on the helmet to measure various activities
2.By using GSM model, we can see the location of bike rider.
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