

Smart Helmet for Alcohol Detection to Prevent from Accidents

¹Sreeja B P , ²Manoj Kumar.S, ³S.Sriram

¹Assistant Professor , ^{2,3}Professor,

^{1,2}Department of Information Technology ,

Karpagam College of Engineering , Coimbatore 641032,Tamil Nadu,India

³Department of Biomedical Engineering, PSNA College of Engineering and Technology,

Dindigul – 624622,Tamil Nadu,India

Corresponding author email id: sreejabp@gmail.com

Abstract :

A smart helmet is one of the types of shielding headgear, which is used by the riders to make bike driving safer than before. This proposed work is to prevent the two wheeler riders from accidents by alcohol detection this also includes fall detection features. Wearing helmet is compulsory for the riders, if the helmet is missed to wear then switch cannot get ON in the bike. A Bluetooth module as wireless link which able to communicate with Node MCU. While starting the bike if the rider getting drunk then it gets automatically explosion switch locked, and forward a message automatically to their registered mobile number with their current location also when accident occurs, it will send message to register numbers by GSM with their current location by GPS module. The individual effectiveness of this proposed works is fall detection and making safety to the riders.

Keywords : Headgear , riders , GSM,

I.INTRODUCTION

The term IOT or Internet of Things means interconnected devices or any other digital and automatic machines. This IOT devices are implemented in various areas. Without human to human or machine to human communication data can transferred all over the world through internet connection for this its required only a Unique Identifiers(UIDs).IOT is the base of wireless technologies and micro EM systems and the network facilities. The stored data can be destroyed with the help of operational Technologies and information technologies (IT).The concept of IOT is started from machine to machine communication. Generally the term machine to machine means the communication is established through network without human support.IOT is used to automate our daily needs, home appliances and this is helpful for business needs also. For business this new technology is very essential to provide better simulations like real time environments and also it will be handling the production, distribution and administration processes. Because of this automation the labors cost to be reduced and this will support the manufactures to deliver the products on time and satisfies the customers also.IOT has a ability to attract the world by its trends and applications.IOT applied in various daily activates and applications like agriculture etc. Now the most prominent technology in this field is smart helmet system to prevent from accidents, this system can reduce the accidents by using the detection sensors attached with the helmet and MQ3 sensors to identify the person consumed

alcohol or not, apart from this other few major sensors also used to work this system of smart helmet. This smart helmet is more comfortable to the users and useful one.

For two wheeler riders helmet is very important to save their life but most of our youths are not much aware of using this helmet and they are not following the rules due to discomfort feeling of wearing helmet, but the vogue among our young people for riding the two wheelers are increased day by day and new model bikes and its features are attracting our young people to get a bike, but the same interest people are not showing to wear the helmets to save their life, again if it is short travel people not willing to wear the helmet, this will cause to major injuries in head if accidents happen, to overcome all these problems the smart helmet system make the people mandatory to wear the helmets while using two wheelers even if it very short distance travel. Without helmet bike cannot start. First step sensors will check for helmet with using the sensor named Force sensing sensors (FSR), next it will check for alcohol consumption by breath analyzer sensor, if both conditions satisfies then the bike can start. Last fall detection sensors are used to check the bike fell down or any accidents happened if so then the message will be forwarded to the registered mobile numbers with current location.

II. RELEATED WORKS

All the two wheeler riders must wear helmet to protect them from serious injuries in head, few countries the rules are monitoring very strictly and taking action if they violate the road transport rules, but some other countries are not giving any strict actions so the people are not following the rules. In the recent periods use of helmet became mandatory for the countries and tighten the rules and regulations to the riders [1].

The smart helmet system mainly designed to avoid the two wheeler accidents from drunk and drive, this will frequently check the wearing of helmet and drunken while driving, this is easy to use and user friendly [2][16][17]

Huang et al. [3][15] suggested a analysis method which is chunk based this analysis id used to detect the transportation at nighttimes, night time analysis not effectively done but based on the contrast reflections it can filter the objects are moving.

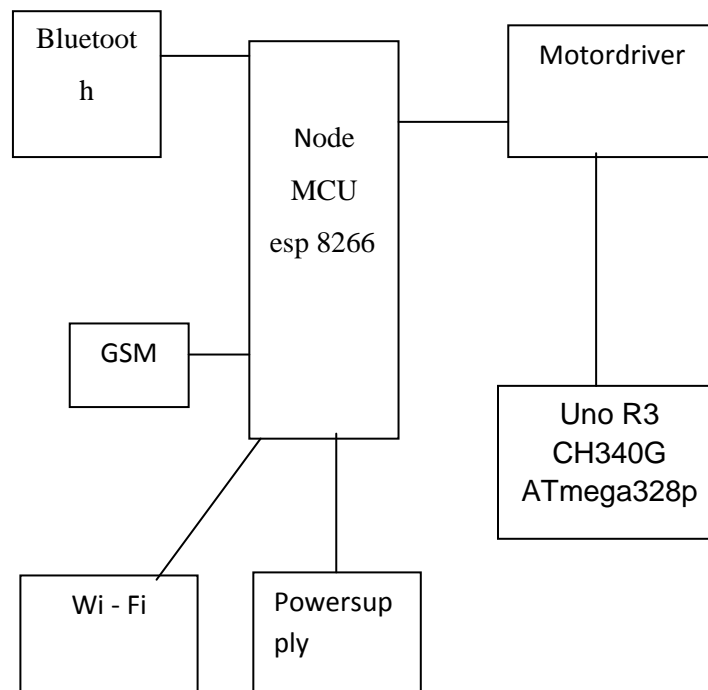
Chun-Che Wang et.al [4][13] introduced a concept of vehicle recognition through few new features, that is brightness, road markers, narrowness also applied a algorithm named taillight pairing algorithm also another one technique called canny edge detection, it will make fade of image edges and measure the angle.

Tushar Raut et.al [5][14] discussed about the security of two wheeler riders, his work focused on the speed of the vehicle and check alcohol consumption, if it identifies alcohol consume or speed is beyond the limit then the vehicle get stop also monitor the fall of bike, if so it sends immediate message to registered phone numbers.

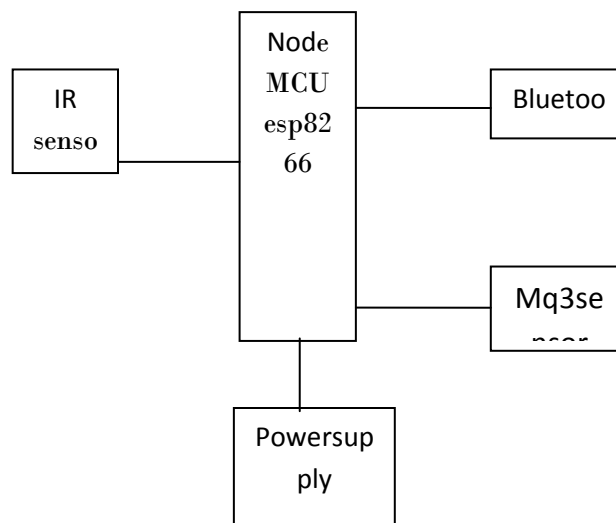
III. METHODOLOGY

This paper mainly discussed about the smart helmet to protect from accidents.

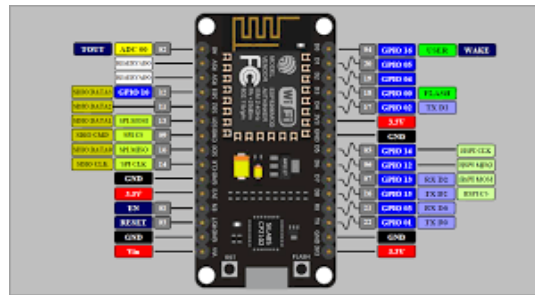
Block Diagram of Vehicle



Block Diagram of Helmet



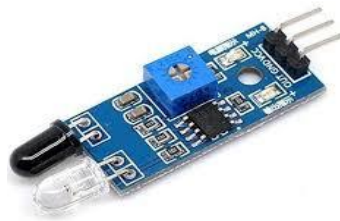
Nodule MCU:



Nodule MCU is one of the open source used in Internet of things raised area. It uses ESP-12 module to identify the hardware from Espressif system which is connected by WIFI and attached with firmware. The other name of Nodule MCU is firmware. This type of firmware is less cost and used in end points of the IOT environment, this will act as transmitter and receiver wireless device.

InfraredSensor:

Infrared sensors are act as detector to sense the infrared lights these are small microchips. Generally it is used in television to get signals from remote for operation, TV remote also attached by this IR sensors for transmitting signal. This sensor used in smart helmet to check speed.



GPRS Module



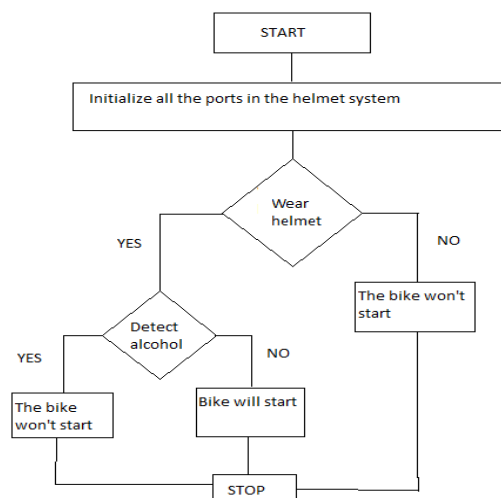
This type of microchips are used to communicate with the device and mobile, to identify the location where the vehicle travelling is identified by this module there are various different features included compress data and digitalization of data.

MQ3 sensor



The MQ3 sensor is used to identify the alcohol consumption, its made by gas inside and simple electronic circuits convert the conductivity to the gas concentration. Its contained few harmful gases like ammonia, sulfide, and benzene steam etc. So this sensors very sensitive, also it contains many different types of sensors to check the alcohol consumption.

III. WORKING MODEL

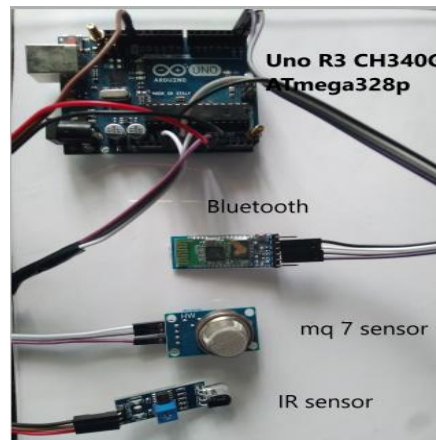


DPDT switch is has the transmitter and the receiver, this is attached with the helmet to get signal. The receiver end connected with the LCD light to check the rider wearing helmet or not and whether he/she had consumed alcohol. When the DRDT switch gets on it started to identify the details, when the person wear the helmet the switch gets ON while the knob touches the head. In the LCD display it shows whether the helmet wearing or not,near to the helmet another one switch to check alcohol consumed or not,by checking on LCD display it show as YES or NO.

IV RESULTS & DISCUSSION

The smart helmet made of many sensors and microcontrollers, First of all to identify whether the person is wearing helmet or not checked by IR sensors and MQ3 sensors are attached to monitor that person consumed alcohol or not. At the result the person wearing helmet and no alcohol consumed then automatically the START signal pass to the vehicle and it gets start. When the person removed the helmet and he/she consumed alcohol the STOP signal send to the vehicle

and automatically stop vehicle. Also other type of sensors GSM.GPS is used to identify the location of the vehicle, this identification helped when the bike fall down. Then the message with current location will send to there.



Helmet System

This figure shows that the Infrared sensor is connected with Uno R3 CH340G ATmega328p. In this mq7 sensor is used to monitor the rider consumed alcohol or not



Vehicle system

Vehicle system is connected with the help of Bluetooth and GSM updates when the person wears the helmet, with the help of GSM the person and the news channels displayed as through

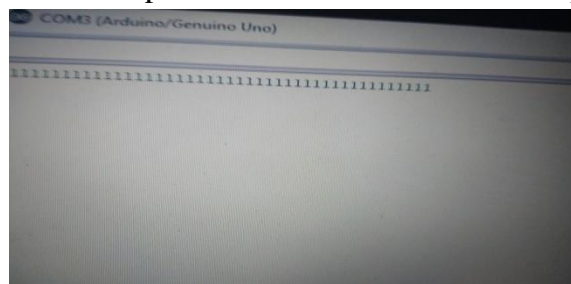


Fig : Output (if the person not consumed alcohol)

If the person not consumed alcohol and the helmet is worn, mq7 sensor value is less than 100 and the IR sensor value reaches the value 1024 or less than 1024, the micro controller in the helmet analyse the collected data from the user and transfers the output.

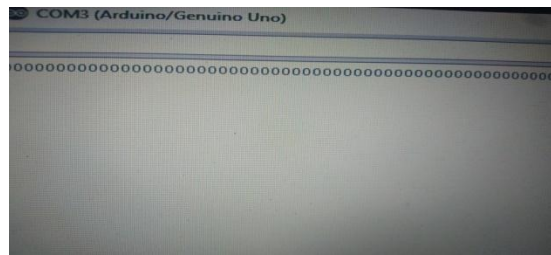


Fig Output (if the person consumed alcohol)

When the person consumed alcohol sensor values displayed as 100 and the IR model has send the report to the registered numbers.

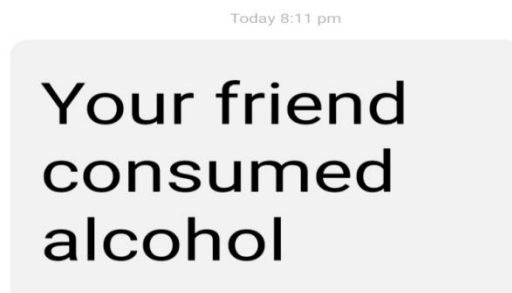


Fig shows what will happen when the person consume alcohol it will directly send the message to messageregistered mobile numbers.

V .CONCLUSION

Nowadays IoT field has tremendous application, in this paper we addressed a different sensors to monitor the two wheeler riders against wearing of helmet, consumption of alcohol and speed of the vehicle, If the project became familiar among the people then no need to monitor the data, the data automatically the data get generated and forward to registered mail ids. The implementation of this studies save more time for the people. The outcome of this project is if the person doesn't wear the helmet or consumed alcohol, then the switches will get ON. When it satisfies the condition then the switch gets ON. As a future work, it can be included to monitor the second person who is sitting at the back.

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