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INNOVATIVE SOLUTION FOR HELMET ALCOHOL DETECTOR & ACCIDENT ALERT USING GPS FOR BIKE RIDER

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Abstract -In order to identify that the bike accidents are increasing day by day which causes deaths. Major deaths are due to head injuries which can be prevented by wearing a helmet. Drunk and drive cases are becoming more, which causes accidents and due to lack of negligence where an accident occurs and people are dying.

These incidents made us develop a smart helmet using internet of things which reduce the accidents and risk of deaths, which has following features, the bike starts only if the rider wears a helmet if the rider is over drunken then the ignition will be automatically offed and if any accident occurs then through GPS it will share their location through esp8266 to the website, which is maintained by project team.

***Key Words*:** Arduino UNO, raspberry pi 3b+, GPS tracker, avoid accident, wear helmet, pulse detection, fall detection, helmet detection

1.INTRODUCTION

The main aim of this project is to detecting the helmet and sense the alcohol if the rider isn't worn the helmet or consumes any alcoholic substance the bike will not start and if any accident normally occurs through gps it will track the accident location and it will share the location to the website . Many people die because of not wearing a helmet .They also die because of not being able to get treatment in time.If an accident occurs at a remote place it's hard for the emergency service to know that an accident has occurred Many lives can be saved simply by wearing a helmet . About 60% of deaths in an accident can be prevented just by not getting treatment in time. This project will make sure that the rider wears the helmet , drinks & drives and notifies the emergency service in case of an accident.

2. SCOPE OF PROJECT

The idea behind our project is to make sure the "Safety on 2 Wheels" for a secure journey.

The most objective of this method is to style a helmet that has safety to bike riders and to stop over a drink and drive cases.

It detects whether or not the rider met with AN accident if he meets, then it alerts the guardian concerning the accident and sends SMS through the given email id/Msg

3. MODULE DESCRIPTION

To detect alcohol smell and helmet not present, if two things happen the vehicle is not switched on.

Detect fall and heartbeat of user, if problem occur GPS tracker send location to website.

A. Alcohol detection

In this module it detects the alcohol smell , if the rider consumes the alcohol means the alcohol sensor will sense that the rider is consumes the alcohol . By using LED(light emitting diode) it will blink that the sensor is detected ,then the vehicle will not start .

The vehicle start only if the rider does not consumes the alcohol. A touch-free sensor solutions integrated into the dashboard of the car or state-of-the-art breath testing equipment for work place and road vechicle use.

The solutions we offer enable usage in road vehicles or workplaces. For OEM customers the sensor can be seamlessly integrated into vehicles so there is no physical hardware in the vehicle cabin. Drivers provide a puff of breath directed towards a small sensor, which can be outfitted in the steering column or side door trim. The system is designed to give a "pass/fail" reading of breath alcohol content in a few seconds.

The sensor technology has also been adapted for a first of its kind mouthpiece free instrumentation for workplace and aftermarket vehicle installations. It is the next generation of alcolocks - for safe and secure starts to each transport, with little inconvenience to the business.

B. Helmet detection

In this module it detects the helmet presents or not, user should choose long drive or short drive option. The user and the vehicle interact each other by using number system.

If the user select the short drive(it does not detect the helmet but, the user can drive the vehicle. If the user select the long drive (it does not works without the helmet process).

C. Fall detection

The fall alert detectors can measure when the user has suddenly fallen by detecting the abrupt changes of body movements. The technology can evaluate an individual's body position, physical activity, and the smoothness of acceleration of movements, says the International Journal of Telemedicine and Applications.

If the device determines that these variables are within the danger zone and a fall has occurred, it will automatically activate an emergency fall alert and call emergency response agents for assistance fall alert detectors measurements infographic.

D. Heart beat sensor

Monitoring heart rate is very important for athletes, patients as it determines the condition of the heart (just heart rate). There are many ways to measure heart rate and the most precise one is using an Electrocardiography But the more easy way to monitor the heart rate is to use a Heartbeat Sensor.

It comes in different shapes and sizes and allows an instant way to measure the heartbeat. Heartbeat Sensors are available in Wrist Watches (Smart Watches), Smart Phones, chest straps, etc. The heartbeat is measured in beats per minute or bpm, which indicates the number of times the heart is contracting or expanding in a minute

4. SYSTEM DESIGN

In this system design it has the 2 sections

- Helmet section
- Bike section

A. Helmet section

This section comprises an alcohol sensor, switch, accelerometer, microcontroller and RF transmitter. The switch examines whether the rider is wearing a helmet or not and alcohol sensor senses the rider is intoxicated or not and transmits the signal through RF transmitter to the bike

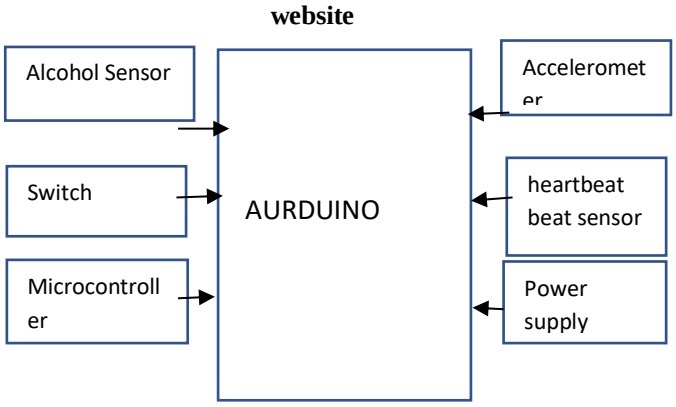

FIG 4.1:BLOCK DIAGRAM OF HELMET SECTION

B. Bike section

This section comprises Microcontroller, GPS modem and decoder. The RF receiver gets the signal from the helmet section and decodes signal using decoder if the person is over drunken then ignition will be automatically offed by the relay and if any accidents occur message will be sent .

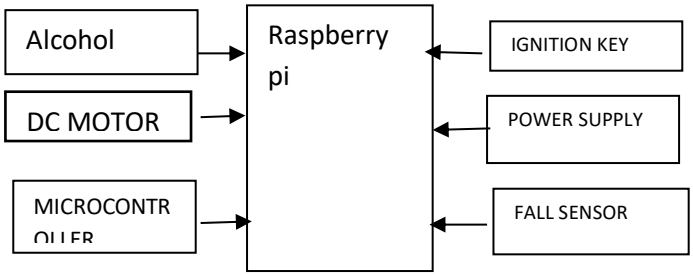

FIG 4.1:BLOCK DIAGRAM OF BIKE SECTION

5. IMPLEMENTATION

```
void rulefollowed(){
  StatoSwitch = digitalRead(pinSwitch);  //Leggo il valore del Reed
  ALCOHOL_detected = digitalRead(AOUTpin); // read analog input pin
  if ((ALCOHOL_detected ==1) && (StatoSwitch == 0)) // ALCOHOL_detected ==1 -->low && (StatoSwitch == 0 --> high
  {
  digitalWrite(in1, HIGH);
  digitalWrite(in2, HIGH);
  analogWrite(motor_ena,255);
  Serial.println("Helmet - Rule followed");
   digitalWrite(led,LOW);
}}
}}
void drunk_drive(){
   ALCOHOL_detected = digitalRead(AOUTpin); // read analog input pin
  if (ALCOHOL_detected ==0){
   digitalWrite(led,HIGH);
   digitalWrite(in1,LOW);
   digitalWrite(in2,LOW);
   Serial.println("ALCOHOL detected...");
  }}
void rulebreak()
StatoSwitch = digitalRead(pinSwitch);  //Leggo il valore del Reed
ALCOHOL_detected = digitalRead(AOUTpin); // read analog input pin
  if((ALCOHOL_detected == 1 ) && (StatoSwitch == 1)) // ALCOHOL_detected ==1 -->low && (StatoSwitch == 1 --> low
  {{
  digitalWrite(in1, HIGH);
  digitalWrite(in2, HIGH);
  analogWrite(motor_ena,150);
  Serial.println("Helmet - Rule BREAKED");
   digitalWrite(led,LOW);}}
void loop(){
   rulefollowed();
   drunk_drive();
   rulebreak();
   delay(1000); }
```

6. SCREENSHOTS

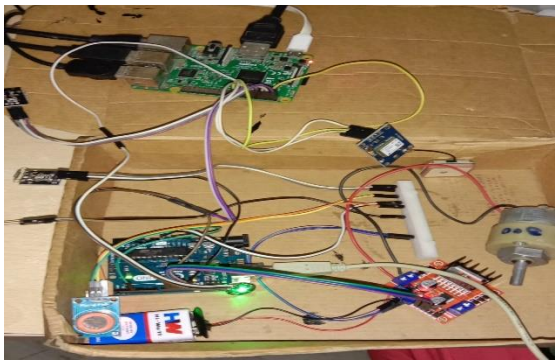

FIG 6.1:ALCOHOL AND HELMET DETECTIO

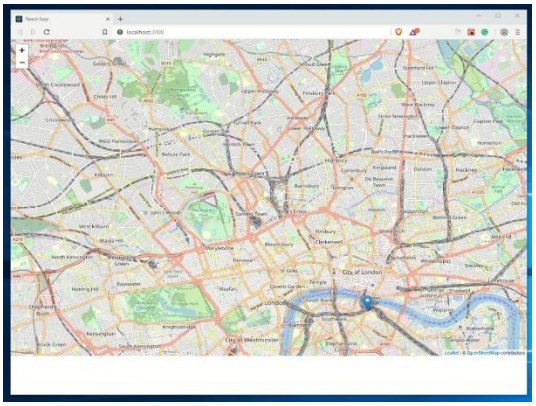

FIG 6.2: ACCIDENT LOCATION USING GPS TRACKER

7. RESULTS AND DISCUSSION

The smart helmet is developed and tested for various conditions to find out how effectively it operates. There are mainly 3 different conditions the smart helmet is tested for. When the user is drunk and he is not wearing any helmet, the bike will start with 155 rpm range in the motor. When the user is wearing a helmet the reed magnetic sensor will give positive signal but since the user is drunk the MQ-3 sensor will give negative reading and as a result the bike will not be able to start. When Driver is drunk, the led will be triggered

8. CONCLUSIONS

Our Smart Helmet is an intelligent system which will aid more secured bike riding. Regarding the poor condition of our roads, large number of accidents, a lot of violations of traffic rules and poor regulation system, there is no alternative to smart helmets for motorcycle rider's safety. Wearing a helmet is imperative while riding a motorcycle because it can save the rider from severe injury to the head in the case of an accident. So, this is where the sharp IR sensor will come into action.

It will ensure that the rider must wear the helmet to start the bike. Drunk driving is also an important issue to consider nowadays. Because drunk driving can cause more accidents in the case of bikes than cars. So, the alcohol sensor will check if the driver is drunk or not. Smart helmets are very popular in Western and European countries, but the concept is not familiar in Bangladesh yet.

If we can make our design more full-proof and get a sponsorship, then we will be to mass produce it.A smart helmet maybe a little bit more expensive than a regular helmet but its benefits certainly outweigh the costsThe system designed provides safety of the riders, in case of accidents it will notify the registered contact and the location of the accident provides a timely safety measure. This also detects the consumption of alcohol and prevents drink and drive cases. This also ensures the person wears the helmet mandatorily

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REFERENCES

1. Jennifer William, Kaustubh Padwal, Nexon Samuel, Akshay Bawkar, Smita Rukhande intelligent Helmet International Journals of Scientific& Engineering Research, volume 7, issue 3, March-2016.
2. Shoeb Ahmed Shabbeer, Merin Melleet Smart helmet for accident detection and notification 2nd IEEE international conference on computational systems and information technology 2017
3. Jennifer William, Kaustubh Padwal, Nexon Samuel, Akshay Bawkar, "Intelligent helmet", International Journal of Scientific &Engineering Research(IJSER), Vol 7, Issue 3, March-2016.

4. Professor Chitte, Mr. Salunke, Akshay S., Mr. Bhosale Nilesh T., "Smart helmet and intelligent bike system", International Research Journal of Engineering and Technology(IRJET), Vol 5,Issue 5, May-2016.
5. Chitte P.P., Salunke Akshay S., Thorat Aniruddha, N Bhosale, "Smart Helmet & Intelligent Bike System", International ResearchJournal of Engineering and Technology (IRJET) Volume: 03 Issue: 05, May-2016.
6. Vijay J, Saritha B, Priyadharshini and Laxmi R, "Drunken Drive Protection System", International Journal of Scientific & Engineering Research(IJSER), Vol. 2, No. 12,December2011, ISSN: 2229-5518.
7. Harish Chandra Mohanta, Rajat Kumar Mahapatra and Jyotirmayee Muduli, "Anti-Theft Mechanism System with Accidental Avoidance and Cabin Safety System for Automobiles", International Refereed Journal of Engineering and Science (IRJES), Vol. 3, No. 4, April-2014, pp. 56-62.
8. R.Prudhvi Raj, Ch. Srikrishna Kanth, A. Bhargav, K. Bharath, "Smart-tec helmet", Advance in Electronic and Electric engineering, Vol 4, No 5,2014