



# The High Security Smart Helmet Using Internet of Things

Mukesh Kumar.P, Pachayappan.S, Rahul.D

UG Student, Department of EIE, Adhiyamaan College of Engineering, Hosur, Tamilnadu, India

**ABSTRACT:** The main goal of our project is accident detection, notification and bar. This helmet makes rider to feel comfortable as well as it safe-guards the person with high protection and security. This sensible helmet works on raspberry pi3 controller that is wireless local area network primarily based, acts as a station for the networking system. Bluetooth and raspberry pi3 was interfaced with cloud based services. The helmet is interfaced with each vehicle and therefore the cloud within which image will be accessed and send to the receiver. Sensors will send command to raspberry pi3. Thus the command are send to the receiver. A computer code application has been created such it locates the precise position in terms of Google map. Cloud primarily based services can send messages to receiver contacts within which information area unit recorded. Most of the accidents area unit because of rash driving, drunk and drive, using mobile phones while driving, violating traffic rules and regulations. Many people lose their lives owing to the late news of accident (i.e.) they may not capable to trace correct GPS location of the accident space. Sometimes we cannot unable to inform about accident at the right time. The primary reason why many people get head injury is because of not wearing helmet.

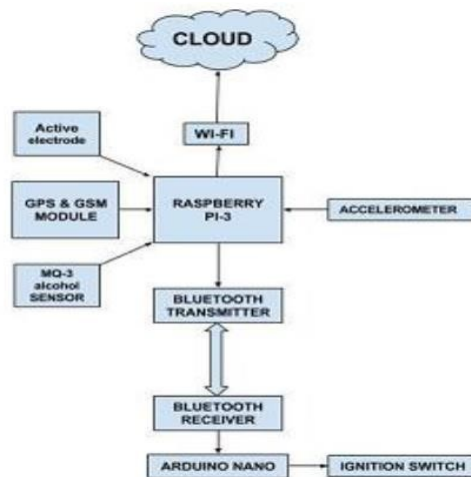
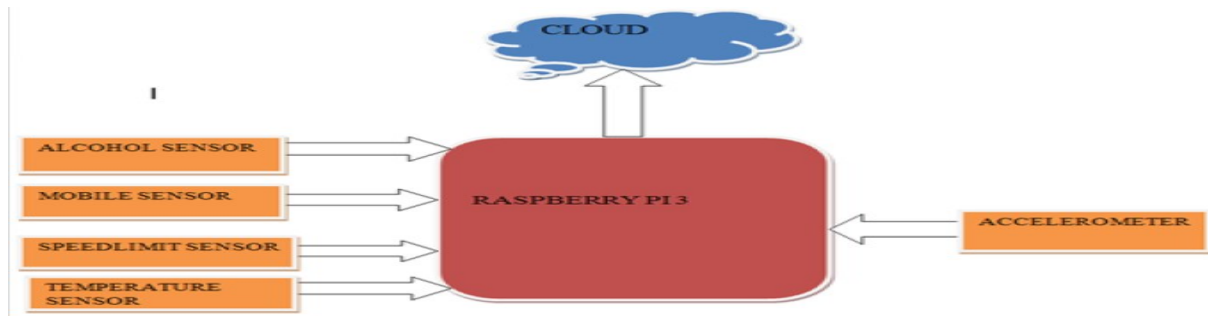
## I.INTRODUCTION

The Major goal of this project is accident detection , hindrance and notification. This can be done by The High Security good Helmet System. Most of the accidents square measure because of rash driving, drunk and drive, victimization mobile phones whereas driving, violating traffic Rules and rules. Many folks lose their lives attributable to the late reportage of accident (i.e.,) they might ineffectual to trace correct GPS location of the accident space. So as to beat these issues this project hasbeen enforced. Typically we tend to cannot unable totell regarding accident at the correct time. The first reason why many folks get head injury is attributable to not carrying helmet. The explanation why most of riders refuse to wear helmet is that they feel discomfort and suffocation in carrying it. For the rider to feel easier, temperature detector that monitors the constant temperature and thermostat that maintains it. The helmet up to now enforce additionally has options like GPS, GSM, alcohol sensors thus this additionally has some disadvantage. The helmet falls accidentally, the GSM can send messages to the emergency contacts now, GPS shows solely latitude and line of longitude position however not visual illustration. This helmet overcomes these drawbacks by causation visual pictures of the situation wherever the person met with the accident with the precise location of latitude and line of longitude and this can be received by his/her contacts. Thus it provides clear outlook to avoid wasting the person. The most objective of this project is:

## II. PROPOSED SYSTEM

Not solely GPS, GSM and alcohol sensing element, and conjointly varied sensors like mobile (voice sensor), regulation sensing element, vibration and pressure sensing element area unit interfaced to raspberry pi3.

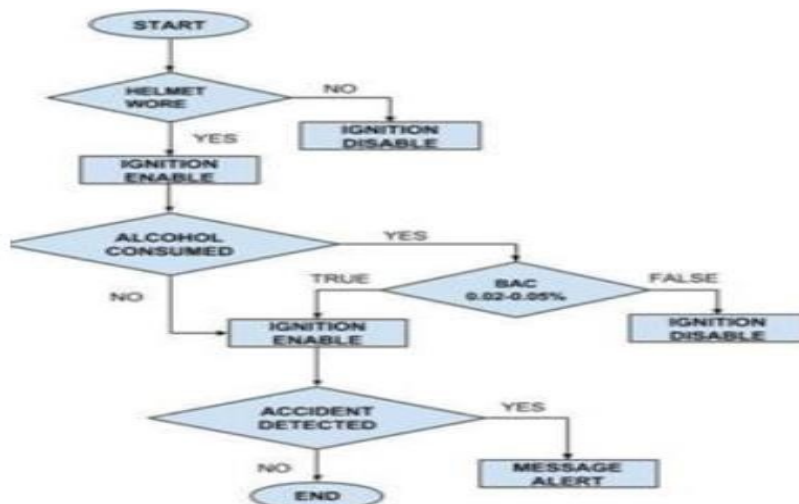
When the accident happens at varied places, the knowledge is gathered by the cloud victimization GPS and GSM of raspberry pi controller so cloud which can send messages to the auto, police, family and to the near-by hospitals



If anyone of the test condition fails (i.e.) helmet should be worn, alcoholic then the bike will not start

**IR SENSORS:**

The Bluetooth transmitter are going to be placed within the helmet and also the Bluetooth receiver at the vehicle. The main perform is simply if the person wears the helmet the bike can begin (ie) ignition can modify. It can detected by ultrasonic or infrared sensors.



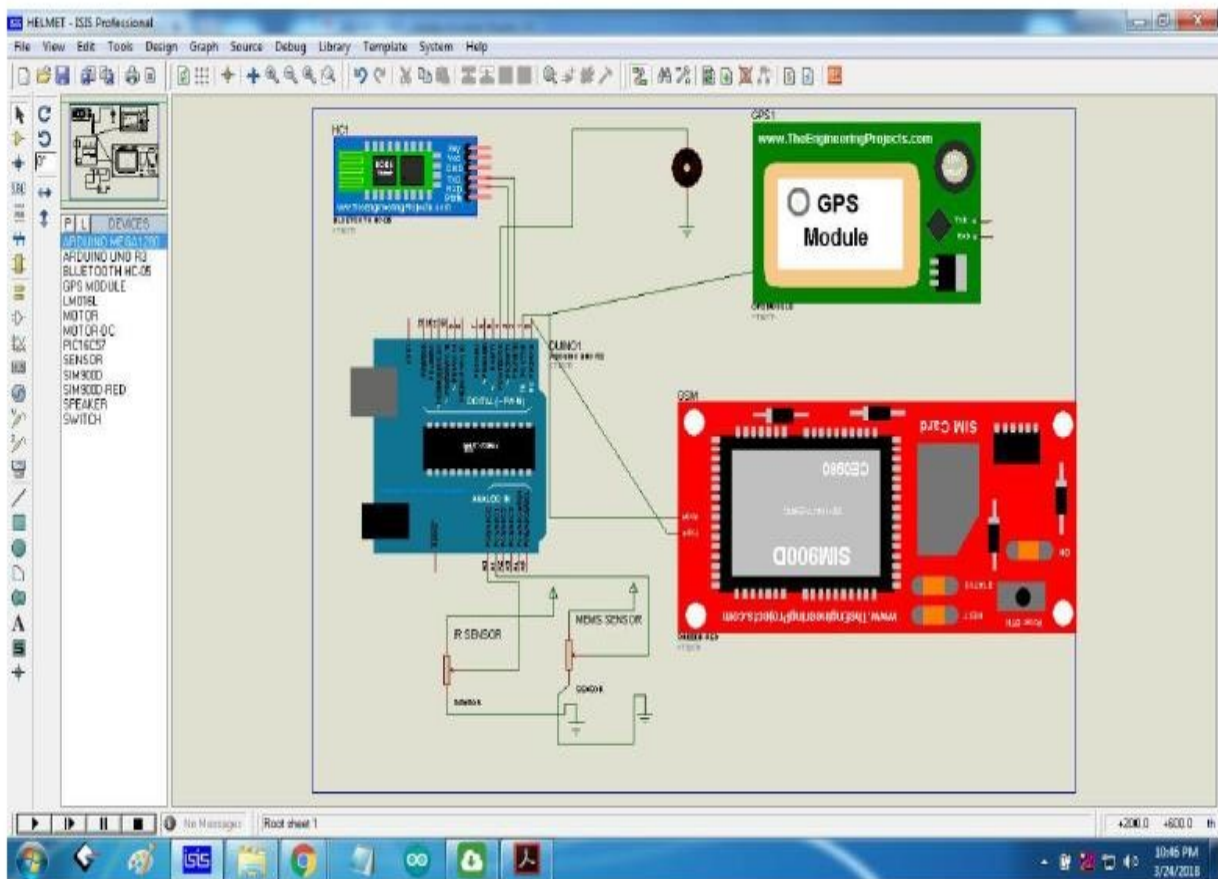
**ALCOHOL SENSORS:**

Alcohol device placed within the mouth region of the helmet interfaced with the raspberry pi, detects whether the rider is alcoholic or not, only when the rider is non-alcoholic the bike will start (i.e.) ignition system will enable, if (BAC>0.03) alcoholic level then it will disable. If anyone of the test condition fails (i.e.) helmet should be worn, alcoholic then the bike will not start.

**TEMPERATURE SENSORS:**

The reason why most of riders refuse to wear helmet is that they feel discomfort and suffocation in wearing it. For the rider to feel more easy, temperature sensor which monitors the constant temperature and thermostat which maintains it. To feel the rider more comfortable to wear the helmet

Temperature sensor detects the temperature inside the helmet and thus thermostat maintains constant temperature inside the helmet (i.e.) 30 degree Celsius which is neither hot nor cold.

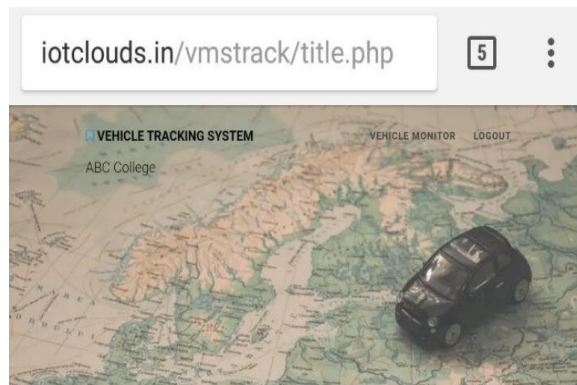


**III.GSM AND CLOUDS**

If the person met with an accident with high pressure then the pressure sensor detects the pressure level, if it exceeds certain pressure level it intimates cloud (GSM) to send messages and vibrate sensor vibrates as soon as the person met with the accident family .When the accident occurs at various places, the information is gathered by the cloud using GPS and GSM of raspberry pi controller and so cloud which can send messages to the auto, police, family and to the nearby hospitals. So that the person will reach to the hospital as fast as potential. The data is thus stored in the cloud and records are maintained. So that the government can able to view the data base of accident areas and declare that region as the accident prone zone.

#### IV.GPS

GPS shows solely latitude and meridian position however not visual illustration. This helmet overcomes these drawbacks by causation visual pictures of the placement wherever the person met with the accident with the precise location of latitude and meridian and this can be received by his/her contacts. Therefore it provides clear outlook to avoid wasting the person. GPS tracks the precise location wherever the accident had occurred. GPS can send information to cloud primarily based services wherever the image are going to be captured mistreatment 360 degree television camera and accessed by security code rule within which solely the emergency contacts will receive the information. A computer code has been created within which GPS navigation can purpose and show within the Google map the image can show the precise position of the rider.



Vehicle Tracking System

Accident occurred @13.03178,80.209419

#### MAP



#### SPEED LIMIT SENSOR:

Speed limit sensor positioned in the vehicle senses the speed at which the rider travels. If he exceeds beyond 120km/hr. then the bike inevitably stops and he cannot move further. Speed lock controller which limits the speed. To prevent the person from impetuous driving speed limit sensor is used.

#### TRAFFIC LIGHT FOLLOWER:

Traffic light adherent placed in the front part of the vehicle acts according to the traffic signal. There will be a wireless communication between transmitter (signal) and receiver (vehicle) if the red signal appears the traffic light supporter



placed in the vehicle receives the signal and makes eruption system to turn off. If green signal acts the ignition system will enable. To make the person to track the traffic signals, the traffic light follower is placed in the vehicle.



If this has been instigated in the real time then it will prevent the person from the accidents and inspires him to ride in the safety way.

It makes the person to ride in a way that even he met with an accident he can protect his life as well.

GPS send data to cloud based facilities where image can be retrieved and send to the receiver contact.

To check the person from accident due to drunk and drive alcohol sensor is placed.

To prevent the rider from spending mobile phones while driving, voice or mobile sensors are used.

To prevent the person from impetuous driving speed limit sensor is used.

To give warning of the accident and area, GPS and GSM is used thus cloud acts as server and raspberry pi3 acts as a client.

To make the person to track the traffic signals the traffic light follower is placed in the vehicle.

To make the rider to garb the helmet and make them feel relaxed temperature sensor is used and the thermostat sustains it.



#### IV. STATISTICAL DATA

This table represents the statistical data of accident severity from 2002 to 2011.

NUMBER OF ROAD ACCIDENTS AND NUMBER OF PERSONS INVOLVED: 2002 TO 2011

Year	Number of Accidents		Number of Persons		Accident Severity
	Total	Fatal	Killed	Injured	
2003	4,06,726	73,589	85,998	435,122	21.1
2004	4,29,910	79,357	92,618	464,521	21.5
2005	4,39,255	83,491	94,968	465,282	21.6
2006	4,60,920	93,917	105,749	496,481	22.9
2007	4,79,216	1,01,161	114,444	513,340	23.9
2008	4,84,704	1,06,591	119,860	523,193	24.7
2009	4,86,384	1,10,993	125,660	515,458	25.8
2010	4,99,628	1,19,558	134,513	527,512	26.9
2011	4,97,686	1,21,618	1,42,485	5,11,394	28.6
2012	4,90,383	1,23,093	1,38,258	5,09,667	28.2
2013	4,86,476	1,22,589	1,37,572	4,94,893	28.3
2014	4,50,898	1,68,359	1,41,526	4,77,731	27.5

Total no. of accidents occurring every year (i.e.), Road traffic accidents.

Two wheeler	23.2%
Truck/ Lorry	19.2%
Others	10.3%
Car	10.1%
Bus	9.4%
Pedestrian	8.3%
Jeep	6.7%
Tempo / Vans	5.7%
Three wheelers	4.8%
Bicycle	2.2%

From the above table, we come to know that majority of the accidents occurs only in two wheelers.

#### V. CONCLUSION

To give notification of the accident and space, GPS and GSM is employed therefore cloud acts as server and raspberry pi acts as a consumer. If this has been enforced within the real time then it'll stop the person from the accidents and encourages him to ride within the safety method. It makes the person to ride in a way that even he met with an accident he can save his life as well. GPS send knowledge to cloud based mostly services wherever image are often accessed and send to the receiver contact. By implementing these type of helmet in future, more than 3/4th of the accidents can be avoided. This helmet ensures the security of the rider and helps in preventing the accidents. Though this helmet has lots of restrictions it should be known as these restrictions are the only way to prevent accidents to be occurring.

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