"Smart Helmet For Speed Detection Using Threshold Value Of Vehicle"

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Abstract *:* The impact when a motorcyclist involves in an accident without wearing a helmet is very dangerous and can cause fatality. This paper will be designing a helmet with a some features to make it smart that normal helmet. Like for overspeeding detection purpose, alcohol detection, and detecting whether the person is wearing a helmet or not and sending the message to the pre-registered number with the help of android application concept. This helmet involves many features so that the helmet is developed with consideration of full safety of the person. hence its more safe than the before one. This smart helmet involves the circuit which design in this manner if the person is not wearing a helmet and if he/she is drunk then the bike won't start. The some author has discussed before on a speed of the vehicle and detecting an alcohol. whenever the person wear a helmet that will detects the alcohol in the breath of person using MQ6 breath analyzer.The main reason of accident is not only the person is driving without a helmet or driving in drunk. The system will basically comprise of a breath analyzing sensor,MQ5 which will sense the level of the alcohol in the breath. if the threshold value of speed of vehicle is exceeded then Sms will be sent to the relative or family members, that sms will provide the location of the victim using GPS system. The smart helmet will be many more other additional features developed by us in this paper.

***Key Words*: GPS, Speed detection, Alcohol detection, Bluetooth Technology,MQ5, Arduino UNO ,Ultrasonic Sensor.**

I. INTRODUCTION

The thought of developing this project comes to do some good for the accident prevention using helmet compulsion strategy to the rider of motorcycle. The proposed work represents the system includes the helmet which having many features like when the rider will not wear a helmet the bike won't start.. Day by day the two wheeler accidents are increasing due to carelessness caused because of not wearing helmet. This projects involves a GPS system for the location detection of the victims, which gives the information of the accident location. The delay of getting help to the victims should be the reason of losing many lives because of the accident. The Overspeeding is the main reason of accident So ,to reduce that we will send the SMS to the numbers which can be set by own rider or it can be fixed in the coding part. As the speed exceeds rather than the speed limit. the Sms sent to that numbers .the Sms includes a link which provides the location where the overspeed is detected. this project proposed work consisting the sensors which is ultrasonic sensor and the MQ5 breath analyzer. the ultrasonic sensor senses the object under Certain distance at distance are set with the help of coding, that provide the information about the helmet is wearing or not. Breath Analyzer detects that the driver is drunk or not. The two of them conditions is satisfied then and then the bike status is shown as ON, otherwise it will shown as OFF.

II. PROBLEM STATEMENT:

Accident which is happened on the road is being the major issue of taking a lives in every year. So,that it will increases the death ratio of the youngsters.The motorcycles are more preferable vehicle in the cities for travelling in the traffic also. many lives are taken due to the carelessness in wearing motorcycle helmets. Most of the people use helmets just to prevent from challan done by traffic control police not for the safety purposes. So, the helmet does not provide the safety to the rider. For two -wheeler rider, Helmet act as a basic protection device. So, to overcome this problem the smart helmet can be used.

III.LITERATURE REVIEW:

III.I Speed Detection using Buzzer System

The Author has discussed accident prevention using speed detection with the help of buzzer system. The project has special idea which makes two wheeler ride safe than before, this is implemented using a buzzer alarm system. The buzzer usually goes on when the accelerometer gives some values beyond a specific limit which is set by the rider. For example, when the rider falls asleep or dozes off, making the accelerometer to pass abrupt values and make the buzzer go high. If alarm goes high that indicate the rider are not in steady condition or the speed of the vehicle is exceeds.

III.II Alcohol Detection using Bluetooth Technology

The Author has discussed Alcohol Detection using Bluetooth Technology with the help of breath analyzer(MQ3).In this project they are using online application that sends the data to a server via an online application programming interface (API). The helmet can connect to any smartphone via Bluetooth, to communicate with the online API, using the internet connection of the smartphone. The breath analyzer are used to sense the alcohol in the breath. That gives information that the user is drunk or not. That information are reflected to the application.

III.III Smart Helmet using internet of things

The Internet of Things (IoT) can provide an infrastructure which integrates the smart services with situational responses, and also allows mutual communication between smart things or devices and people over a network. So we have come up with this idea of IoT based smart helmet which ensures the safety of the rider while riding. This work also addresses the intelligent motor bike helmet system which is used to inform the rider about rear big trucks/buses for avoiding collisions.

III.IV Smart Helmet based on microcontroller with GSM and GPRS system.

The author has discussed in this paper related to the safety of the person while an accident was happened on the road. The aim of this proposed work is designed in this manner so that the information of accident should be send within a some earlier time so that the action are taken near by them instantly and that will help to save the life of the injured person. The system consisting of microcontroller for the centrally controlling of the system and the GSM is used for the calling or sending a SMS purpose in the project and GRPS system is used for tracking a location. Their proposed system detects the accident and sends text message along with a voice message within a minute to the registered number.

IV.PROPOSED SYSTEM:

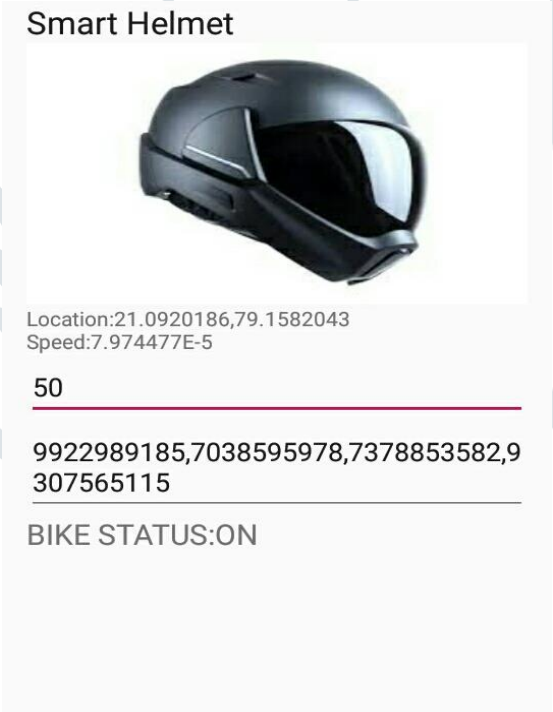


Fig -1: Implementation of Software Application.

IV.I OVERVIEW:

The software application provides the location of the vehicle, Where the overspeeding is detected. The message is sent by that application to the pre-stored numbers. The speed of the vehicle is also detected. The software application provides the location of the vehicle. The application shows the bike status i.e. ON/OFF status. The speed of the vehicle can be set by the rider. The pre-stored number will be added by the user itself. If the user is wearing a helmet and user is not drunk, then the bike status is ON, otherwise the bike status shown as OFF in the Application. The proposed system involves a software part which is involves a java programming for the android application.

Application named as "Android Smart Helmet" .The application having a text box in which we can edit the numbers by own so that the SMS will send on that numbers. whenever the driver speed is set up by his own and when the speed will get exceeds. The message of overspeeding will be sent to the registered numbers.As the location is display in that application and speed is also seen in the application.

IV.II ARCHITECTURE :

This project will help to give the information of the accident to the ambulance or pre-stored numbers. So, that we are using a smartphone which having inbuilt function of GSM technology to send the SMS . We are using GSM module, which has a SIM card slot to place the SIM card and send a SMS. Sending a SMS alone can't help the driver, if we send. In this project SMS will includes the location of the victim. For this we use GPS module to extract the location of the accident, the GPS data will contain the latitude and longitude values are used to find accurate position of the place of accident.

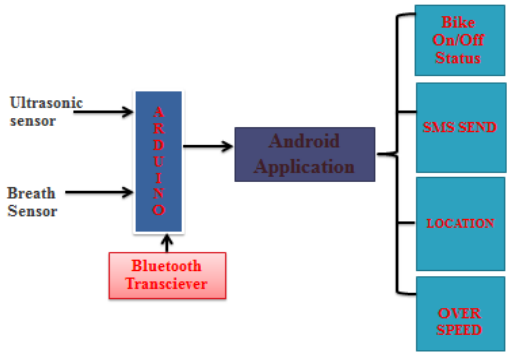


Fig.Architectural Diagram

This proposed system includes sensors such as Ultrasonic sensor,breath Analyzer(MQ5),etc .that will be mounted on helmet surface. The ultrasonic sensor used to sense the helmet is on the head or not. And breath analyzer is sense the alcohol in the breath. The Bluetooth transceiver used to connect the Arduino uno kit via smartphone. The android application is used to detect the location of victim ,speed of the vehicle,and send the message to the prestored numbers. The message included the information that where the overspeeding is detected.if the user is wearing a helmet and user is not drunk then bike status is shown as ON,otherwise bike status will be shown as OFF in the application.

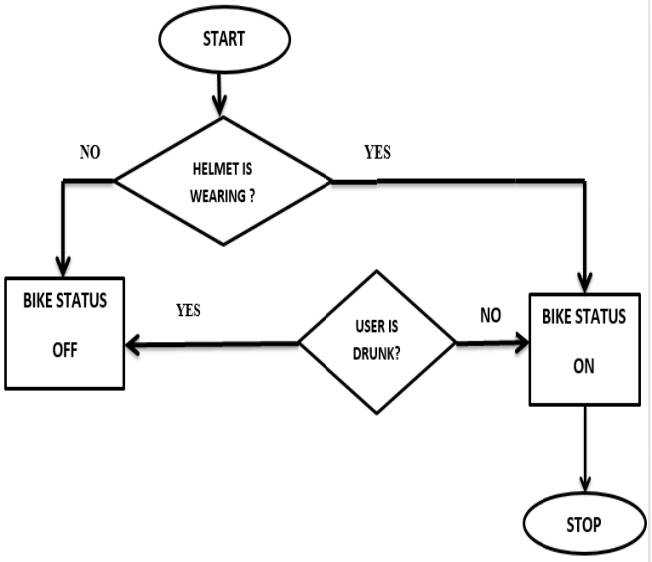


Fig. System flowchart of helmet

The system flowchart of helmet and bike module represents the helmet is wear by the rider or not.the ultrasonic sensor sense the object near by that .so it detects the person is wearing a helmet or not.and the breath analyzer is senses the alcohol in the breath. that detects the person is drunken or not. if both the condition is satisfied then the bike status is shown as ON .
Otherwise the bike status is shown as OFF. Alcohol Gas sensor MQ6 is using for alcohol detection with some range of alcohol concentrations.
Its conductivity increases as the concentration of alcohol gases increases.

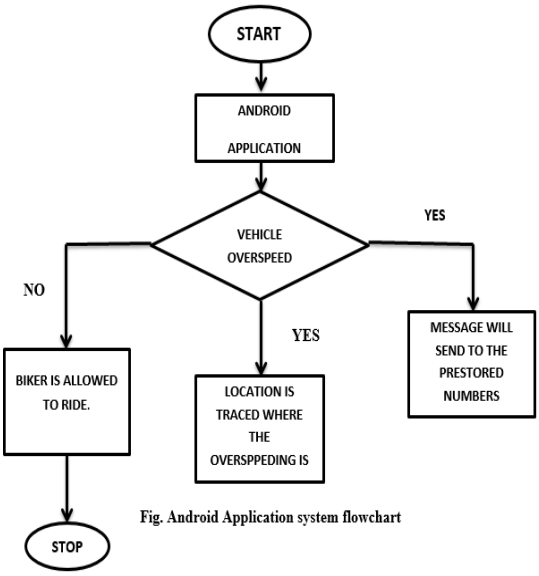


Fig .System Flowchart of Android Application

The software application provides the location of the vehicle.The message is sent by that application to the pre-stored numbers. The speed of the vehicle is also detected. The application shows the bike status i.e. ON/OFF status. software application involves the android programming which shows the threshold value of speed .if the value of speed goes above threshold and then the SMS will send to the numbers given in the text box of application. we can add the numbers by own.so that convenient to send the SMS and as the person wear a helmet and user is not drunk then the bike status shown as ON, otherwise OFF.

V.HOW IT WORKS?

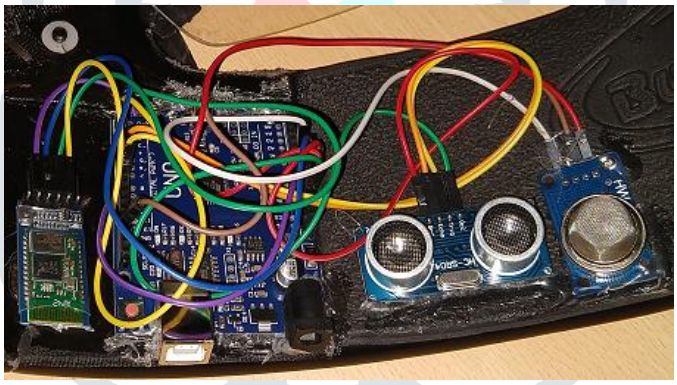


Fig.Hardware Mounting in Helmet

The project involves the hardware mounting in the helmet.The hardware involves HC-05 bluetooth transceiver, MQ-6Gas sensor,Ultrasonic sensor,Arduino Uno ,interfacing cables.
First of all the power supply is provided to the hardware through a power bank. Than to connect the hardware with the software application , we should have to turn ON the blueooth from our smart phone.

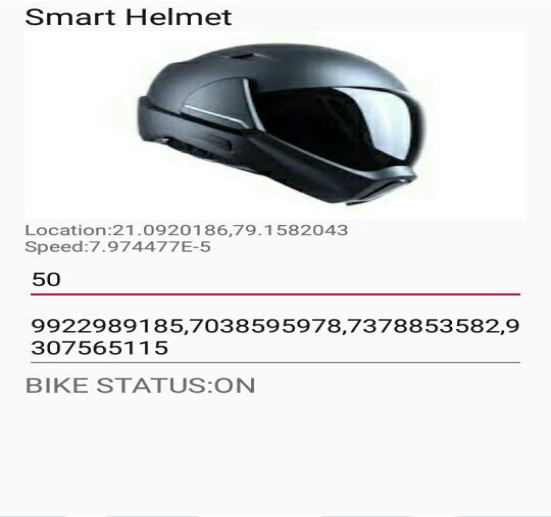
Fig.Bluetooth Device ON

Now, the device is paired with HC-05 Bluetooth Transceiver to connect the application with Hardware.

Fig.Paired Device

Fig. Connecting

Now, the device is connected with the Bluetooth.so that the speed and location will reflect in the application.



The application named as smart helmet will shows the bike status ON/OFF. There are two conditions to start the bike.
1.If a person will wear a helmet then the First condition is true with the help of ultrasonic Sensor.
2.If a person is not drunk then the second Condition is true, in which we are using Breath Analyzer to sense the alcohol in the breath.
Now, the person will start driving.
When the speed of the vehicle is going above threshold value of speed then the sms will send to the numbers which can be add by own. The SMS is send that includes the location where the overspeeding is detected.

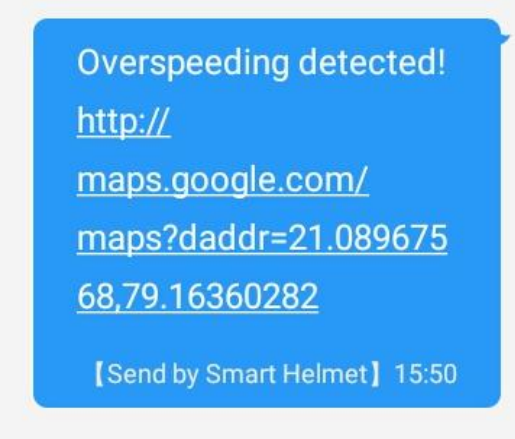


Fig.Overspeeding message

VI.RESULT :

Nowaday's , Many two wheeler accident leads to increasing death ratio in every year. In this our project is the effective solution to reduce accident which is caused by carelessness of the rider. so, the helmet wearing is compulsion for safety purpose. we had added new features to make it very useful.
By implementing this system a safer and more secure two wheeler journey is possible. The accident tracker will track the location where the accident is caused and send the SMS to the Ambulance or the family members.so that the help will provide immediately to the victim.

VII.ACKNOWLEDGEMENT

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