Intelligent System for Bike Riders with Alcohol Detection and SMS Alert

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Abstract- *The Project ensures that the rider cannot start the bike without wearing helmet for the safety of the rider and stop rider from disobeying traffic rule Section 129.The Motor Vehicles Act, 1988. In that act every person driving or riding shall, while in a public place, wear [protective headgear conforming to the standards of Bureau of Indian Standards]:.Also when rider start the bike the alcohol sensor present in the helmet sense the content of alcohol in rider breath. If the alcohol content present more the then limit then this system won't allow to start the bike which prevents the case of drunk and driving which must need to be stopped. Because the Drunk And Driving is dangerous for both rider as well as pedestrians .The accident detection system placed in bike if bike meets an accident then sensor sense and pass signal to the controller and then controller extract GPS co-ordinate and send the location of the accident to the rider family members using Gsm module.*

Keywords:- Accident Detection, Alcohol Detection, SmS Alert, Ignition system, Rule to be followed.

1. INTRODUCTION

ROAD traffic crashes take the lives of nearly 1.3 million every year and injure 20-50 million more in the world. According to Global status report on road safety 2013 total number of road traffic deaths remains unacceptably high at 1.24 million per year.According to survey 70% of riders injured or died just because not wearing the helmet and over speeding. the accident may not be directly responsible for the accident, it may be fault of rider, but end of the day it's both the drivers involved in the accidents who is going to suffer.According to survey to survey Only 28 countries, covering 7% of the world's population, have comprehensive road safety laws on five key risk factors: drinking and driving, speeding, and failing to use motorcycle helmets,. So, to overcome from this problem this smart helmet is being introduced which helps to reduce number of accidents that takes every day and also helps to reduce death ratio.The aim of our project is to reduce the accident which can easily prevented just by taking some precaution and this project ensures that rider must take those precaution before riding.

2. Problem with traditional system

Nowadays people don't wear helmet just because it add extra weight to their head. These system do not enforce rider to apply protection before riding.

3. Features

Features of the project listed below:

- Riders must wear helmet to start bike
- Alcohol Detection
- Accident Detection
- Sms alert to family members

3. Working

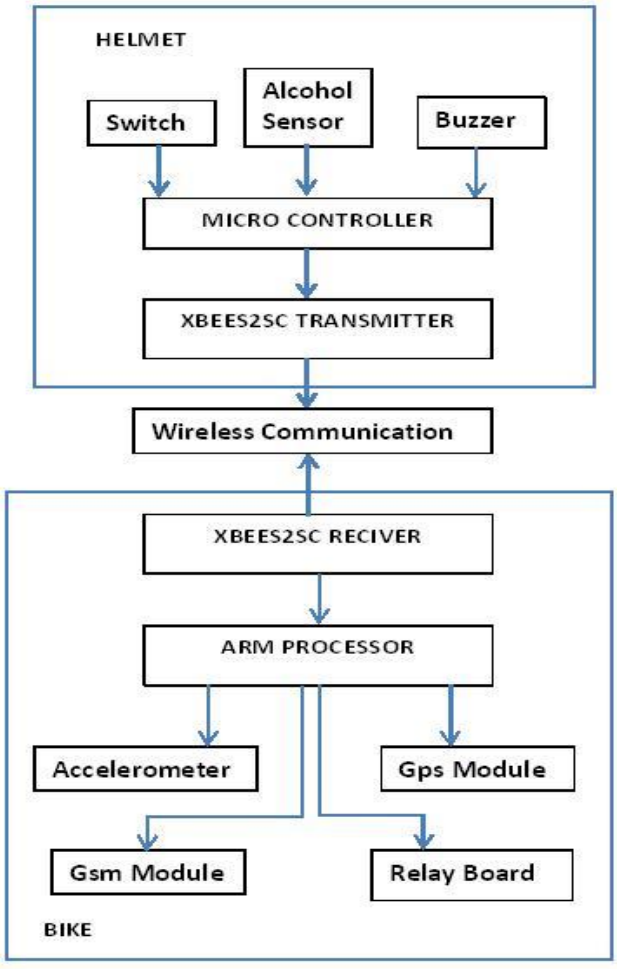


Fig. Block Diagram of Whole Project

The whole project is dived into two parts

1.) Transmitter (Helmet)

2.) Receiver(Bike)

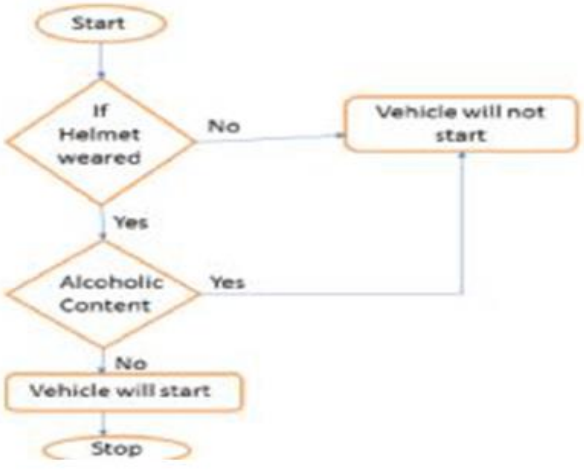
Helmet- On the helmet there is X-beeS2c transmitter which transmit data to the receiver of bike and provide wireless communication between bike and helmet, A alcohol sensor(Alcohol Gas Sensor - MQ-3 - SEN-08880) to detect the alcohol content, a switch to check whether rider helmet wearing the helmet or not, a buzzer to indicate the connection established successfully between helmet and bike and it buzzes when the alcohol detected, and micro controller which interface all the component together and it takes the reading from the sensor and check for condition and send On/Off signal to the bike via transmitter to control the ignition of bike. If the readings from the sensor are greater the limit then it send "OFF" signal to the bike and bike will stop. If the readings are normal then it send "ON" signal to the bike and bike functions smoothly. And there is a 8V rechargeable battery to supply power to the whole circuit.

Bike- At the bike side there is XbeeS2c receiver to receive the data sent by the transmitter of the helmet. There is a Gps Module on the bike circuit for extracting the longitude and latitude values from the satellite. The longitude and latitude value(Coordinates) of the accident site is sent to the family member via GsmSim 800L Module this module send the sms to the family members if the content of the alcohol is detected in the helmet. There Accelerometer for detecting the vibration of the bike if the vibration greater the threshold it send "OFF" to the controller and ignition of bike turns. ARM processor is the controller of the bike part where the code is uploaded and it manage all the functionality of the bike parts it take inputs of helmet and bike sensors process the data and according to the condition it control the ignition of the bike and commands the Gsm module to send the sms, and command the relay board to switch "ON" or "OFF"

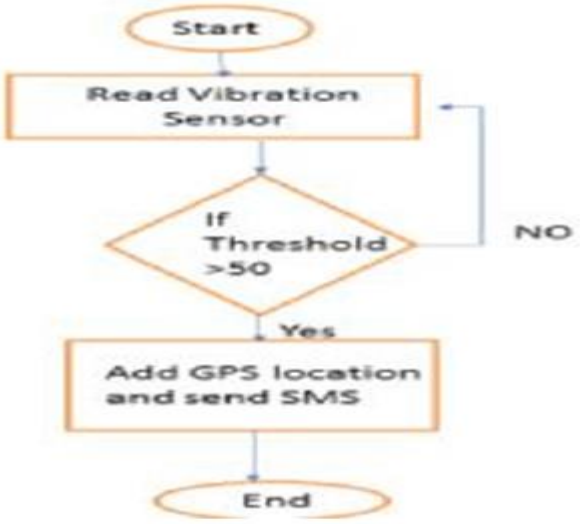
ON=Bike run smoothly all the condition satisfied.
OFF= Bike will stop some or all condition unsatisfied
And there is a 12V battery to power the whole circuit.

4. Flowchart

4.1 Ignition of Bike:



4.2AccidentTakesPlace:



5. Component description and their operating voltage

Components on Bike

NAME	Description	Operating Voltage
XbeeS2c Receiver	Receive the data sent by the bike transmitter	3.3V
ARM processor	Controller of Circuit	3.3v
Buzzer	To indicate connection successful	3.3v
Accelerometer	To detect accident by measuring vibration	5v
Gsm Module	To send message to the family members	5v
Gps Module	Extract the longitude and latitude value	5v
Relay Board	ON or OFF the ignition of Bike	6/12v

Component on Helmet

NAME	Description	Operating Voltage
XbeeS2c Transmitter	Transmit the data to the bike receiver	3.3V
Buzzer	To indicate connection successful	3.3v
Micro Controller	Controller of Circuit	5v
Alcohol Sensor	Sense the content of Alcohol	5v

6. Result

7. CONCLUSIONS:

This helmet can reduce number of road accidents that takes place every day. It ensures the safety of the biker as well as sends the victim's location to family members. Also, death rate can drastically be reduced by implementing this circuit as mandatory while driving and make everyone's life easier and smoother. And this System also enforce Riders to follow the Government rulethat must be followed for rider safety and others safety too.

8. Future Enhancement

- This system can be used for navigation purpose by adding Bluetooth can connecting with Google map via mobile phone so rider get the direction from the helmet
- This System can be implanted in car with seat belts
- Overspending can be controlled by modifying the code for accelerometer.

9. References

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