
Smart Helmet



Under Guidance of
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Team Members

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**Do you know how many riders
met with an accident and had a
severe injury because of not
wearing a Helmet?**

Road accidents involving two-wheelers, it was found that among the dead, 82% were not wearing helmets. **Among 434 deaths, 356 motorists were found not wearing helmets.**

The Smart Helmet

It can detect the accident
and **send the alert SMS** to
you emergency contact



INTRODUCTION

1. Motorcycles have high rate of fatal accidents than cars or trucks and buses.
2. This project aims for accident detection, safety and security of bike rider.
3. In this we are detecting the accident with the help of accelerometer(ADXL335) and when accident happens the GSM(SIM900A) technology is used to send the SMS alert to the emergency contact added by the rider with the GPS(NEO-6M) location.
4. Alcohol sensor is used to detect the person is drunk or not and send sms to saved contact number.
5. We can also get the speed alert message when speed of the rider cross the mentioned speed limit with the help of GPS(NEO-6M)

Abstract

Accidents are increasing day by day. Wearing helmets are made compulsory by the government. Even then most of the bike riders are neglecting it. Due to this, even small accidents are becoming fatal. Also, accidents occurring at remote places are becoming fatal due to the slow reach of treatment. This project aims at solving those problems. This prototype helmet can detect accidents by using the vibrational sensor. It will send the information and location to the emergency contacts. Also, it can be used to send the alcohol content and high speed alerts to the emergency contact of the rider. It can be used in real time safety system.

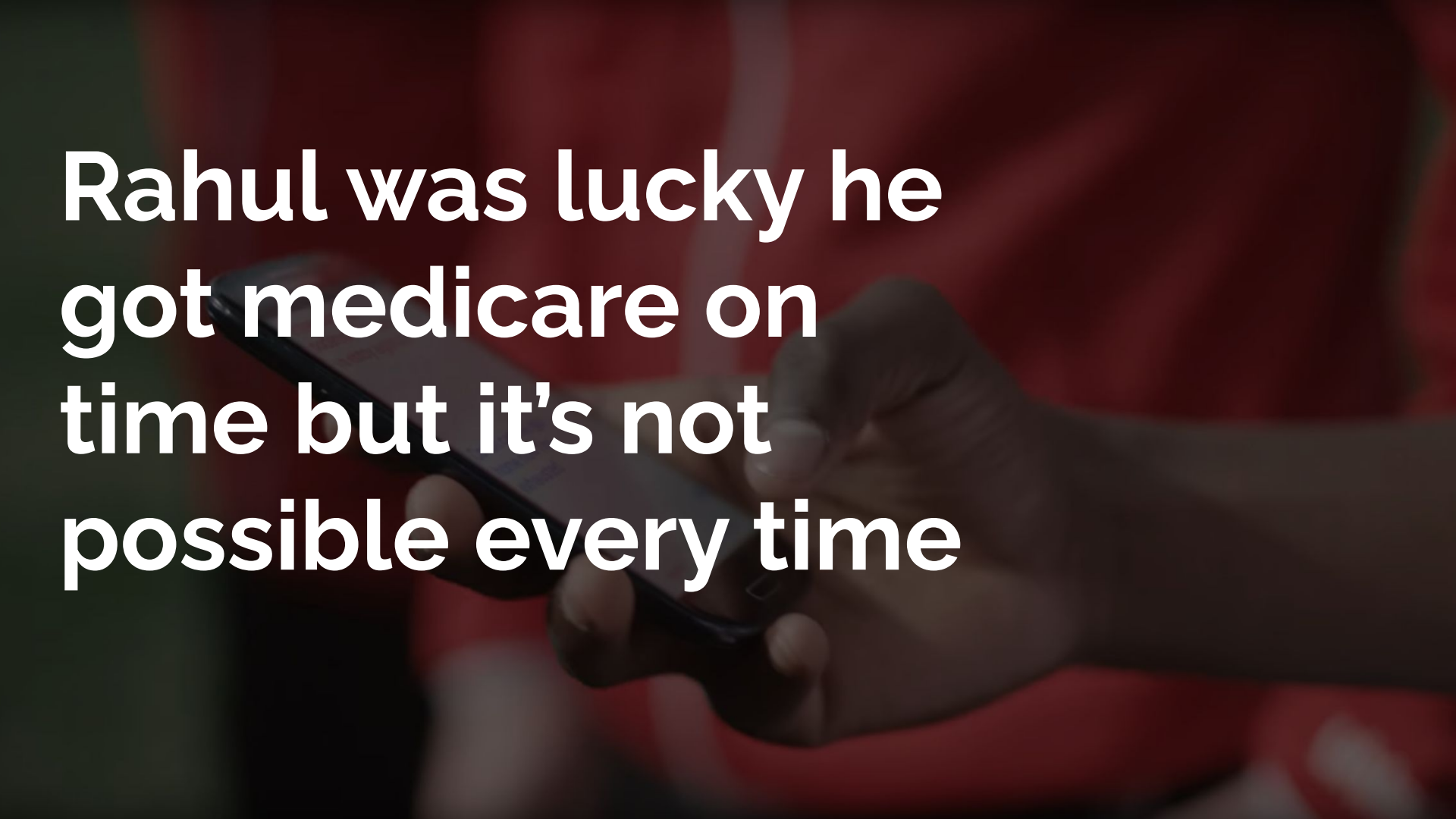


→ Let me tell you the
story



Meet Rahul.

I was recently met with an accident while riding, coming back to home after college. None of my friends knows that i met with an accident only nearby people came to help me and gave me medicare.

A close-up photograph of a person's hand holding a black smartphone. The hand is positioned horizontally, with the thumb resting on the screen. The background is a blurred red and white pattern, possibly a flag or a wall. Overlaid on the image is white text in a bold, sans-serif font.

Rahul was lucky he
got medicare on
time but it's not
possible every time

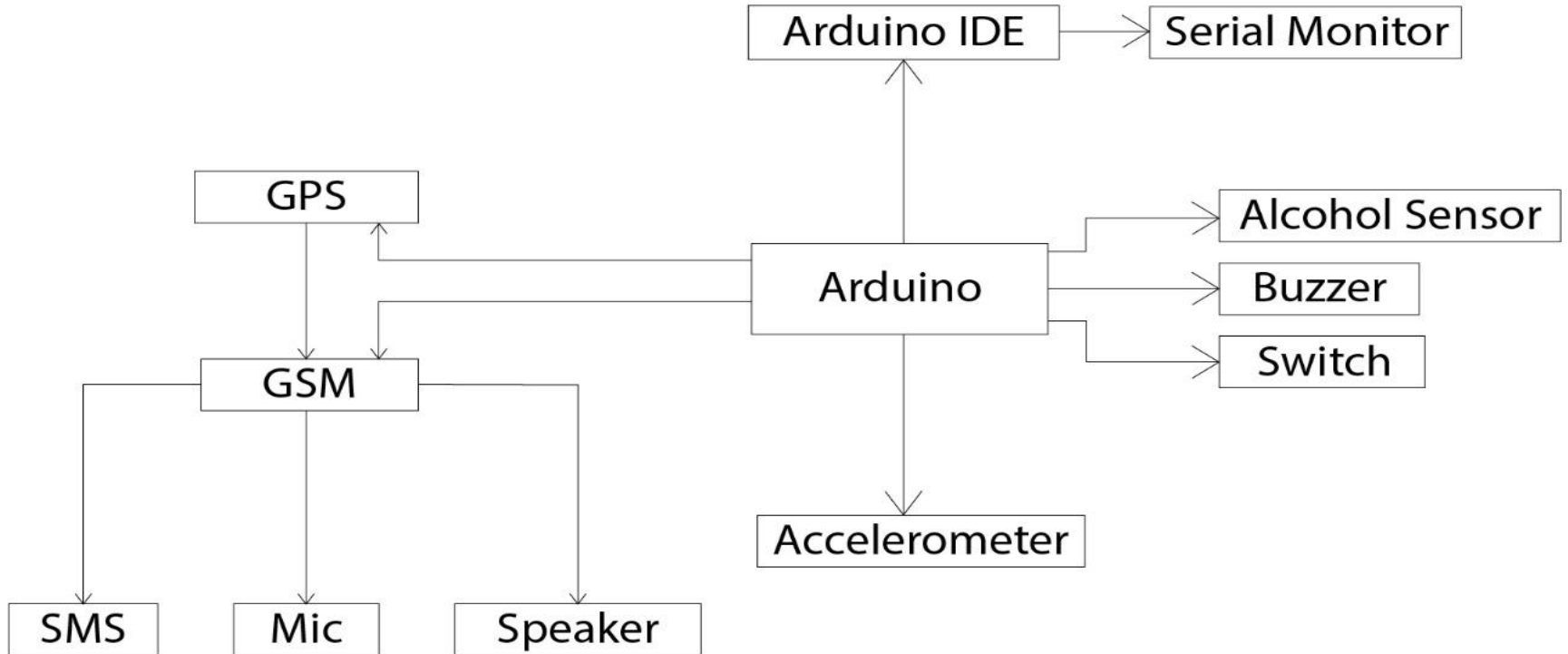
Then, We discovered Smart Helmet

We try to make Riders Helmet to contact his/her family member at the time of emergency

We try to give Rider's a friendly, personalized experience by understanding exactly what they need at the time of emergency.



BLOCK DIAGRAM



HARDWARE DESCRIPTION :

•Arduino Uno:

- ATmega328p chip
- 4 digital i/o pins(6 pwm outputs)
- 6 analog inputs (A0 to A5)
- Frequency(clock speed)- 16MHz
- Operating voltage - 5v
- Supply voltage - 7 to 12v
- Input output DC current - 40mA
- Flash memory - 32KB
- EEPROM - 1KB



Accelerometer(ADXL335) :

- Operating voltage - 1.8 to 3.6V
- Operating current - 350 Micro amps
- Turn on time - 1ms
- Axis of acceleration sensitivity - x,y,z
- Output type - Analog voltage



GSM Module(SIM 900A) :

- Supply voltage - 3.4 to 4.5v
- Support single SIM card
- Antena support is available
- Serial port :RXD input and TX output
- Frequency range - 900 and 1800MHz
- Audio interfaces :Supports MIC input & speaker output
- Programable via AT command



GPS Module(NEO 6M):

- Supply voltage - 3.3V
- Operating voltage - 2.7 to 5v
- Operating current - 45 mA
- Baud rate 9600(default)
- EEPROM to save configuration setting
- Separated GPS antenna



Alcohol sensor:

- Operating voltage - 5V DC
- Current 150 mA
- Digital output D0 - 0.1V to 5V
- Analog output A0 - 0.1V to 0.3V



MIC:

- Operating voltage 3.3- 5V DC
- Sensitivity 56 - 58 DB
- Frequency 20Hz -50KHz
- Low power consumption



Speaker:

- Supply voltage -5V DC
- Operating current -500mA
- Sensitivity 80 DB

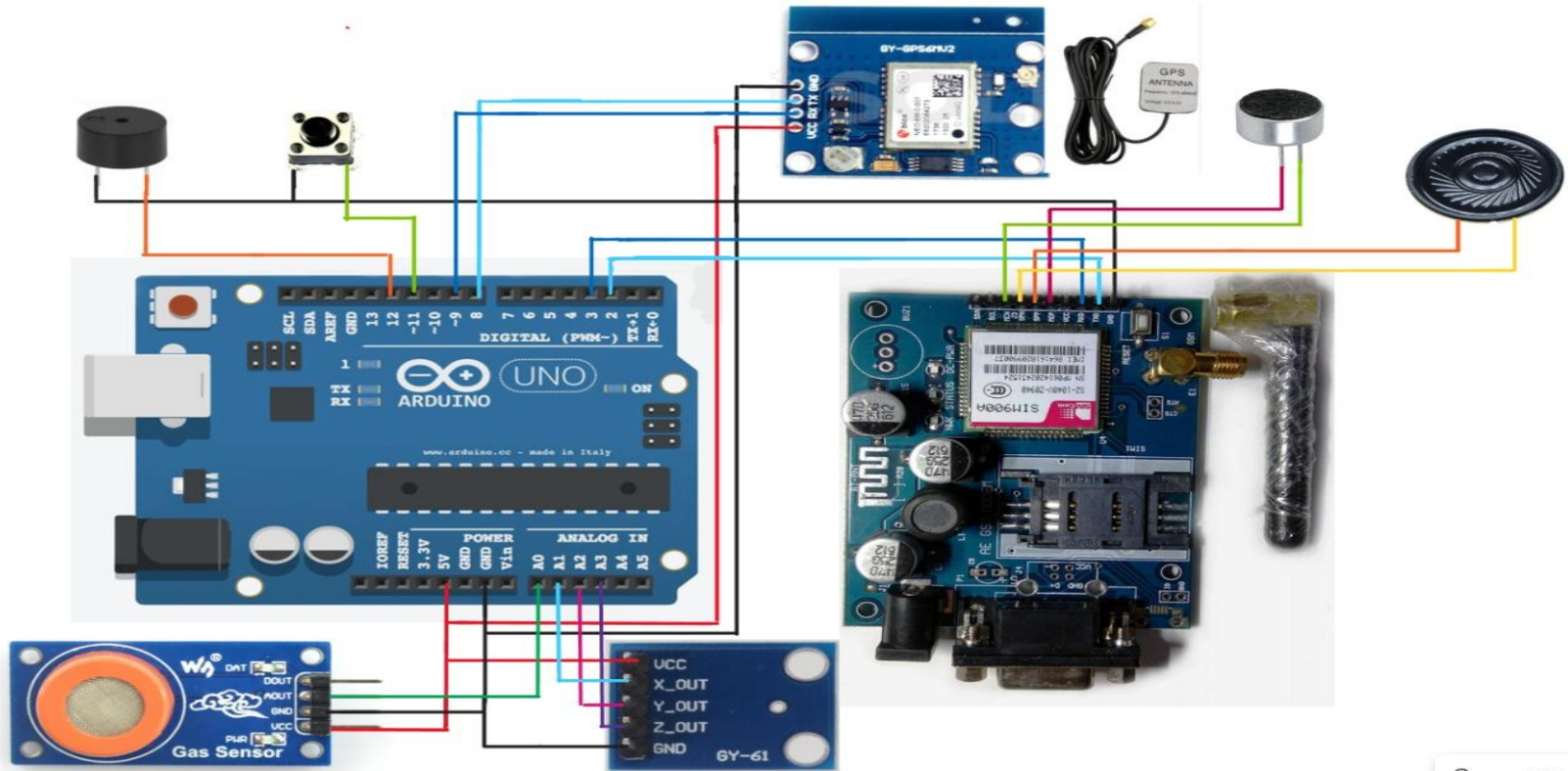


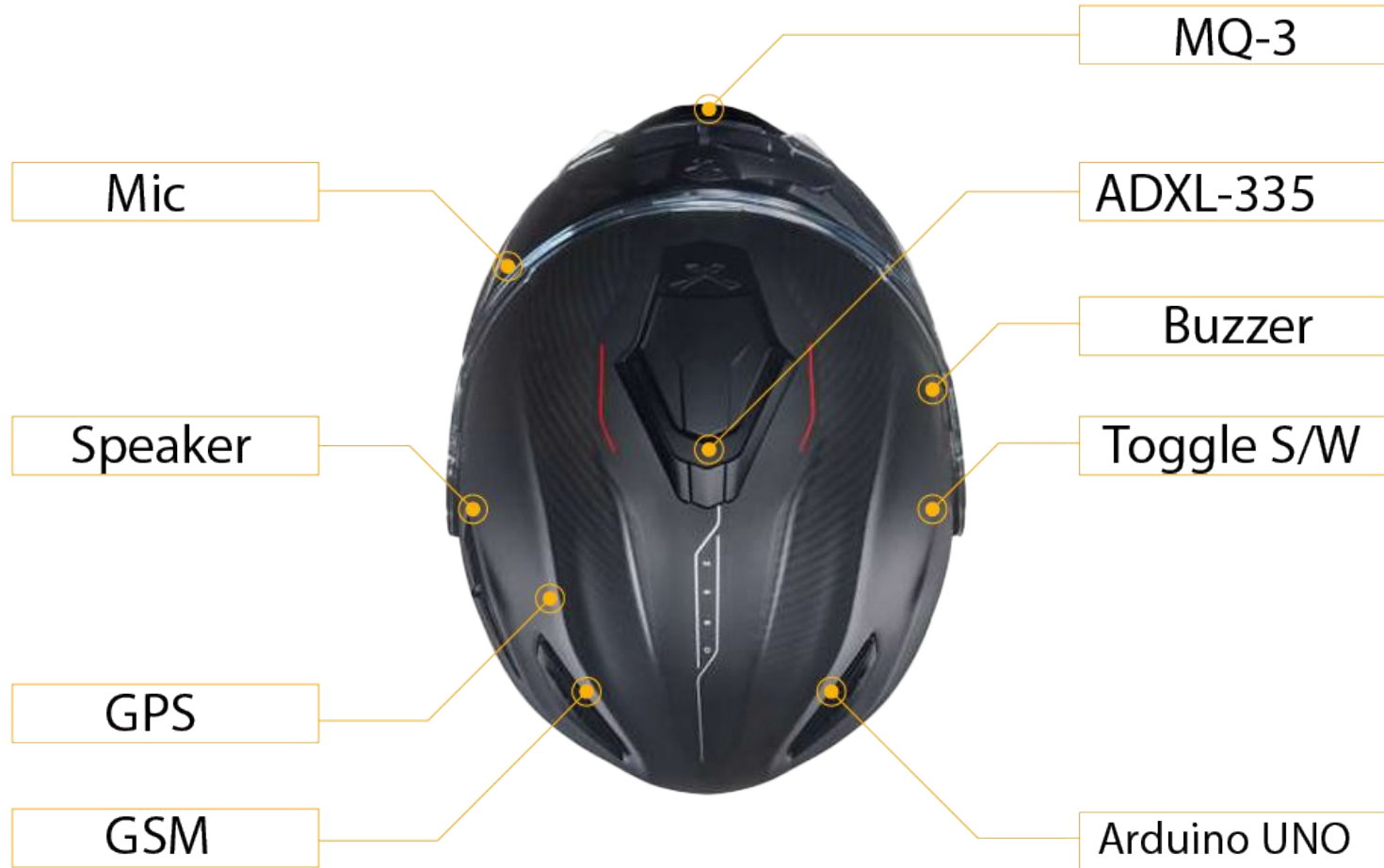
Buzzer:

- Operating voltage 4 - 8V
- Operating current upto 32mA
- Sensitivity 85 DB

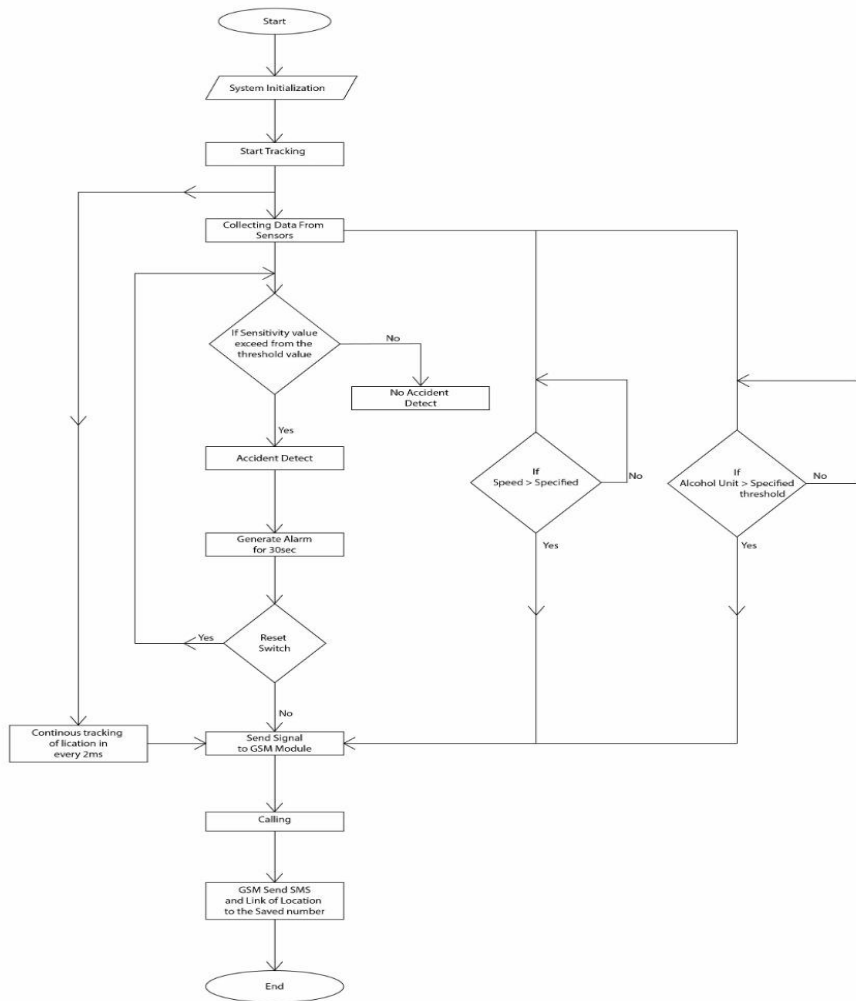


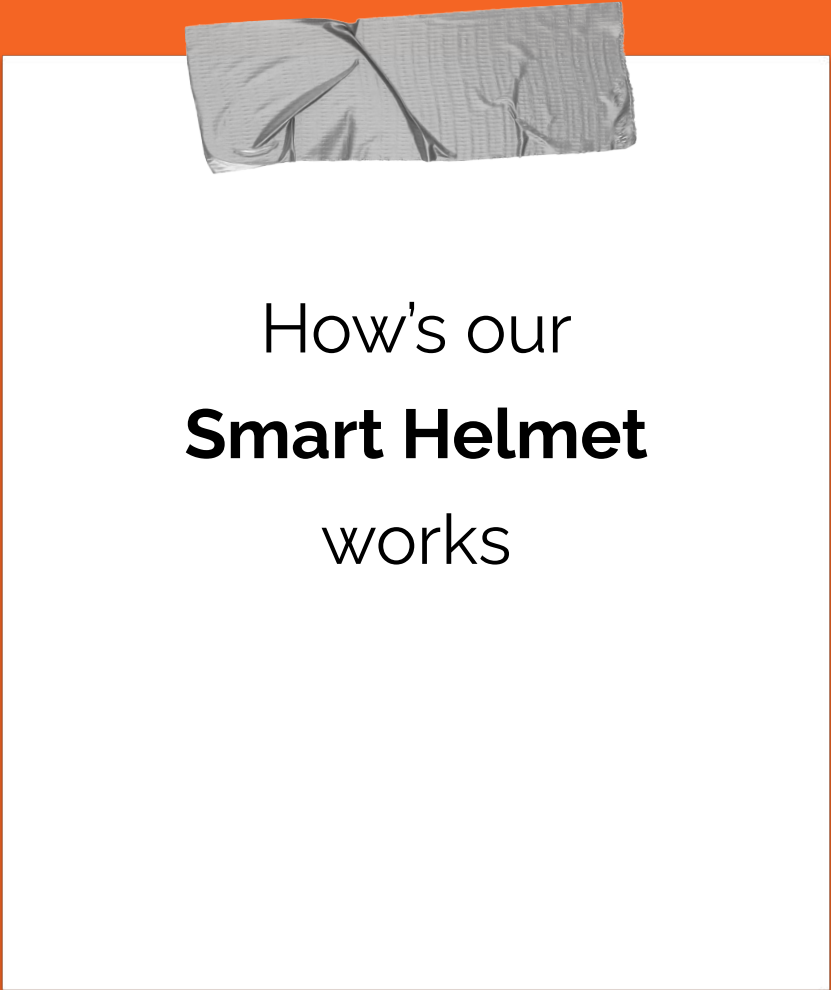
Circuit Diagram





Flowchart





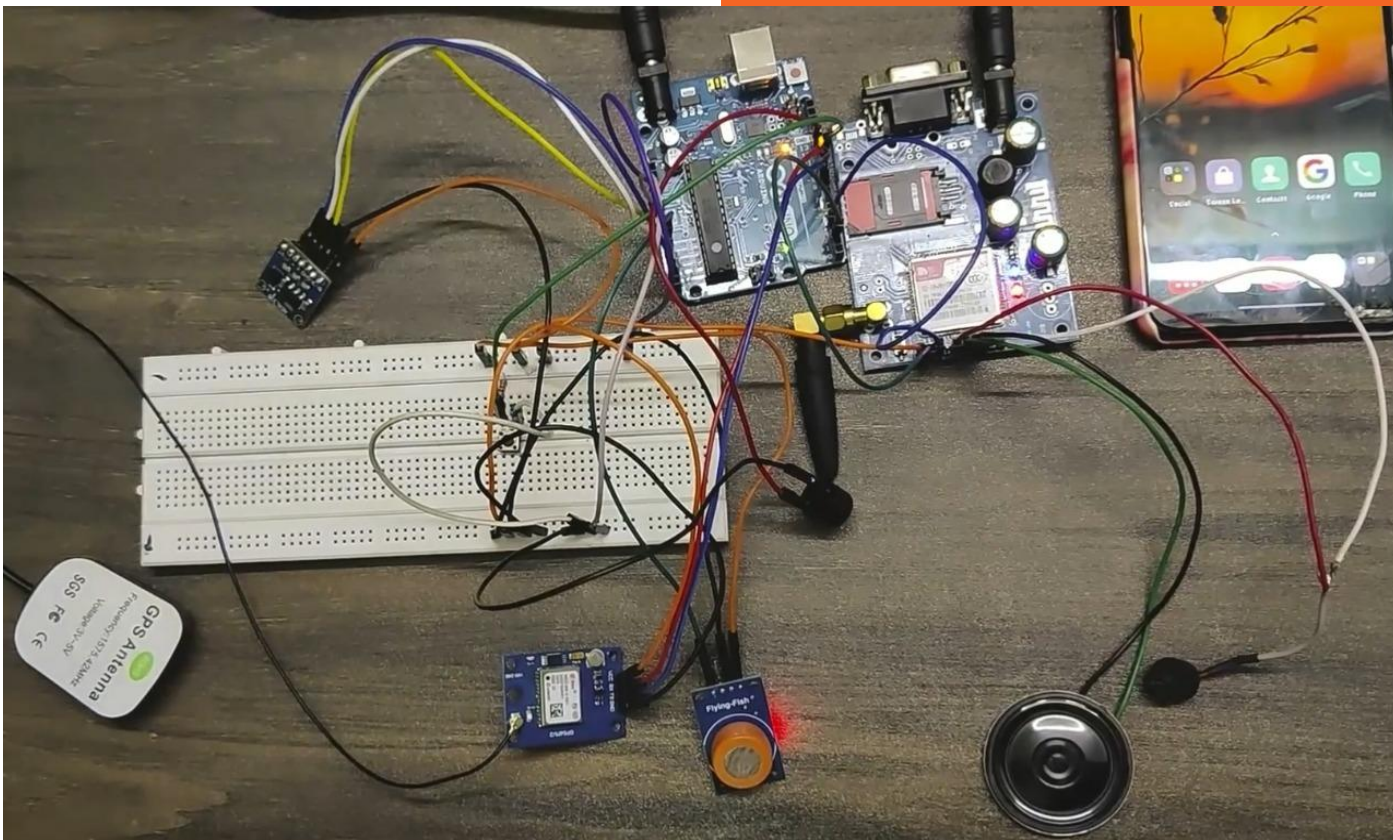
How's our
Smart Helmet
works

WORKING

- Arduino is used for controlling whole the process.
 - GPS Receiver is used for detecting coordinates of the vehicle,
 - GSM module is used for sending the alert SMS with the coordinates and the link to Google Map.
 - Accelerometer namely ADXL335 is used for detecting accident..
 - A sensor will sense the occurrence of an accident and give Its output to the microcontroller. The GPS detects the latitude and longitudinal position of the vehicle.
 - The microcontroller sends an alert message to these pre saved numbers using the GSM module. Any message can be pre entered in the system by the user.
-

- In case of any false accident detection, the buzzer will make a beep sound for a particular time interval and the system can be reset by using a push button.
- Alcohol sensor will sense the alcohol content of the rider. And sends the alert message to the pre saved number.
- The same GPS module will sense the speed of the rider. The GPS detects the latitude and longitudinal position of the rider. The microcontroller sends an alert message regarding the high speed to the emergency contact number of the rider using the GSM module.

Developed Model:



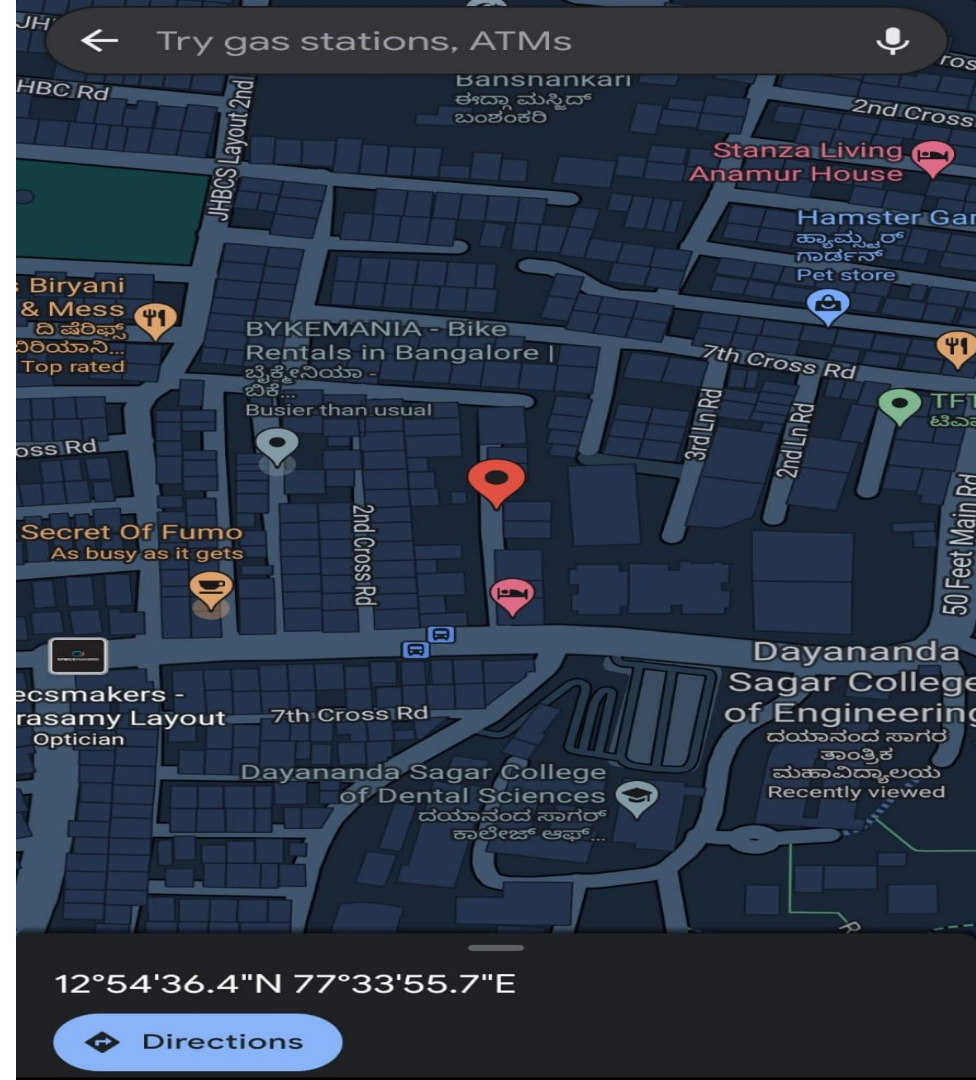
RESULT

Sat, 9 July, 7:17 pm

Accident Alert!! <http://maps.google.com/maps?q=loc:12.910078,77.565529|2.910102,77.565468>

Alcohol Alert!! <http://maps.google.com/maps?q=loc:12.910078,77.565529>,

Speed Alert!! <http://maps.google.com/maps?q=loc:12.910078,77.565529>,



Application:

- It can be used in real time safety system.
 - We can implement the whole circuit into small VLSI chip that can be embedded into the helmet and bike unit.
 - It can be designed for less power consuming safety system
 - This safety system technology can further be enhanced in car or other vehicle by replacing the helmet with seat belt.
 - This system can be interfaced with vehicle airbag system for safety. When an accident occurs both the systems will be activated for the safety of the victim.
 - In case of theft, the helmet can be tracked by using helmet positioning system. The GPS system allows the tracking of helmet from anywhere.
-

Conclusion

As the concluding part of this project, we would like to say that-- "Without proper action at the proper time, danger awaits us with a bigger face." We must act on time when a person is injured. We must take care of a person the way it is meant. Otherwise, a valuable life might be lost. We need to understand how precious the lives are and what's the importance of first-aid carries, in saving those precious lives. If this project imparts this idea to even one person, we would think that the project will be successful.

The background of the image shows the silhouettes of several people sitting at a long table, looking out a large window. Outside the window, a city skyline is visible, featuring a prominent domed building, likely a cathedral or government building, and other urban structures. The scene is dimly lit, with the primary light source coming from the window, creating a silhouette effect on the people and the interior.

Make your next Ride even
more better and safe by
joining
the **community**.