

CHAPTER 1

INTRODUCTION

Road safety has always been in the center of attention. The signboards, direction arrows and lanes have made following rules much easier and served as an excellent guide, nevertheless, uncontrollable factors such as careless drivers exist and thus accidents still happen. In the United States of America alone during 2014 nearly "9,967 people died of alcohol-impaired-driving", that is one alcohol-impaired driving fatality every 53 minutes. The list goes on and on for other countries too . In a survey that has been done recently it was found that nearly 70% of the road accidents are caused by drunk driving. It is further noted that out of 56 accidents 15 or so deaths occur from not wearing the helmet. Therefore it is necessary to enhance and improvise new techniques.

In today's era, Especially in the young generation, the craze of motor bikes is really remarkable. The middle class families prefer to buy motorbikes over 4-wheels, because of their low price, various varieties available in the market, due to cut-thought competitions between 2 wheeler companies and durability. As the bikers in our country are increasing, road mishaps are also increasing day by day, due to which many deaths occur, most of them are caused due to most common negligence of drink and drive. This motivates us to think about making a system which ensures the safety of bikers by making it necessary to wear the helmet, as per government guidelines, to start the vehicle if only the person had not drunk.

The thought of developing this project comes to do some good things towards the society. Day by day the 2 wheeler accident increasing and leads to loss of many lives. According to a Survey in India there are around 698 accidents occurring due to bike crashes per year. The reasons may be many such as no proper driving knowledge, No good condition of bike, fast riding of bike, drink and drive etc.

Some time the person injured, 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. If accidents are one issue, lack of treatment in proper time is another reason for deaths.

This is a situation we observe our day to day life, a thought of finding some solution to resolve this problem come up with this idea of giving the information about accident as soon as possible and in TIME....!!!! Because after all time matters a lot, if everything is done in time, at least we can save half the lives that are lost due to bike accidents.

Considering major factor for avoiding the accident causes such as Avoid drunk and drive.

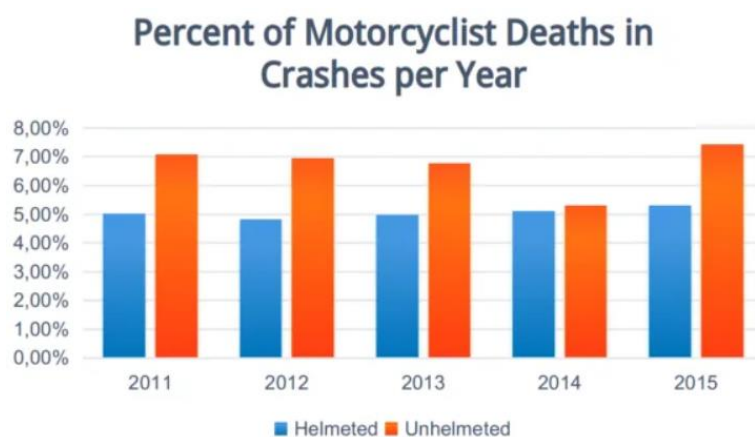


Fig 1.1: Helmet Saving Head Injury caused due to accident

When people wear motorcycle helmets in a state, their chance of suffering other crash-related injuries, including brain injuries, and facial injuries, falls dramatically. Those riders less likely to suffer serious head injuries or brain injuries end up at the emergency room if they wear a helmet. There is great significance in this finding. It is impossible to have a minor traumatic brain injury (TBI). The long-term effects of a concussion are severe, even to moderate trauma.



**Fig 1.2 : Accident due to not wearing
Helmet**



**Fig 1.3: Graph showing Deaths due to not wearing
helmet**



Fig 1.4 : Head injuries due to not wearing helmet

CHAPTER 2

LITERATURE SURVEY

V.R Ghule et. al. [1] :This paper shows an android app which can be run on any android compatible tablets and mobile phones. The main purpose of this project is to provide ease and convenience to the clients for the servicing of their vehicles. According to current location of the customer whom need to service his/her vehicle at service center will be suggested location of best service center near to the customer current location. For security, 4D security will be provided on the parameters of name, contact number, photo and unique id of the person who will take the bike from the client. Once the client request for the service to the specified service center, service man accepts the request and will take the bike from his home. On spot service also will be provided if some accident happened and damaged to the vehicle. This provides convenience to the clients to service their bikes/cars. Now a days multiple service center is available under specific brand but they are not connected and also local garages are not online. So, this project helps to connect them.

H.C Impanal et. al. [2] : Review on smart helmet for accident detection using IOT: The accidents in case of two wheelers are more compared to other vehicles. This may be avoided by wearing helmets and riding vehicles without consuming alcohol. This survey is on smart helmet for accident avoidance and also examining various related techniques. This research also helps us to understand IOT technology which is being emerged now a days .From the literature survey we find that the method proposed using micro-controller RF transmitter and other sensors is cost effective but we find the system proposed using Raspberry pi module, Pi camera, Pressure Sensor, GPS system which uses image processing algorithms is most efficient since the image processing is included so that we can easily detect the use of helmet from the rider. Smart helmet system helps to provide safety and security to the two wheeler riders.

G. Adarsh et. al. [3] : Every year, people are injured or killed on the road because of drunk driving. In this prototype, we are making an attempt to prevent users from starting the car if they have consumed any alcohol and if they haven't worn their seat belt. This system will take advantage of an MQ3 alcohol sensor, which is mounted on the seat belt of the driver seat. The reading from the sensor unit is compared with the allowed threshold value by the Raspberry Pi, if the driver is found drunk, the ignition locking system will prevent the driver from starting the car. The system is also mounted with a camera (Raspberry Pi Camera) to detect the driver's presence so that the user may be prevented from trying to compromise it. The engine is started only when the user clears the alcohol test and the seat belt is engaged. The project is aimed to be implemented in real life to reduce the number of accidents caused by drunk driving and the carelessness of the driver to engage the seat belt

Nitin Agarwal et. al. [4] : Many peoples could save their life in accident cases if they wear helmet at the time of accident. Continuously road rules are violated. So as to overcome these problems, an Smart helmet is proposed having a control system built inside a helmet. Smart Helmet for Motorcyclist is a project undertaken to increase the rate of road safety among motorcyclists. The idea is obtained after knowing that the increasing number of fatal road accidents over the years is cause for concern among motorcyclists. It consist a RF transmitter and a RF receiver system. the bike will not get start without wearing helmet by the user, as user wear helmet a rf signal radiate from transmitter and once these rf signal get sensed by the receiver placed in the ignition switch of the bike, bike will get start. Security system applied in this project meet the characteristics of a perfect rider and the application should be highlighted. The project is expected to improve safety and reduce accidents, especially fatal to the motorcyclist.

Sharath P N et. Al [02 :]A smart helmet is a type of protective headgear used by the rider which makes bike driving safer than before. To Provide safety for the rider, the rider has to wear the helmet. By using advanced features like alcohol detection, accident identification, location tracking, fall detection. It is a hands free device. This is not only a smart helmet but also a feature of a smart bike. It is compulsory to wear the helmet, without which the ignition switch cannot turn ON. An RF Module is used as an wireless link for communication between receiver and transmitter. The ignition gets locked automatically when the rider is drunk , and sends a

message to the registered number with his current location. If accident occurs it will send a message through GSM along with location with the help of GPS module.

Aman Deshmukh et. al. [6] : A smart vehicle safety system is a combination of a smart helmet and a vehicle unit. The motive of this system is to ensure all the motorcycle riders should compulsorily wear helmet and obey traffic rule. A smart helmet is a type of protective headgear comprising of some technology used by the rider which makes bike driving safer than before. The main purpose of this helmet is to provide safety to the rider. This can be implemented by using advanced features like alcohol detection, helmet detection, location tracking and regular system data reports. This makes it not only a smart helmet but also a feature of a smart bike. It is compulsory to wear the helmet, without which the ignition switch cannot turn ON. An RF Module with an encoder and decoder unit can be used as a wireless link for communication between transmitter and receiver. If the rider is drunk the ignition gets automatically locked, and sends a message to the registered number with his current location. Similarly, if the rider is not wearing a helmet, then the ignition switch cannot turn on and again a message is sent to the registered number with the system location. Thus the distinctive feature of this system is that it ensures that the vehicle is being driven after taking all the necessary precautions.

Shravya Keesari et. al.[5] : The designed Smart helmet ensures the safety of the rider by making it necessary to wear helmet, and also ensures that the rider hasn't consumed alcohol more than the permissible limit. If any of these prime safety rules are violated, the proposed system will prevent the biker from starting the bike. The system also helps in efficient handling of the aftermath of accidents by sending a SMS with the location of the biker to the police station. This ensures that the victims get proper and prompt medical attention, if he/she met with an accident.

Deekshitha K et. al. [8] : There was a survey till 31 Mar 2015, Which clear tells that there are total of 154.3 million two wheelers are there in India, considering only the registered and renewed vehicle in to consideration, as the density of the two wheelers increases, there the main risk factor is to provide the safety to the riders.70% of the accidents reported are subjected to two wheelers and out 3 accidents in India 2accidents involve two wheelers as a victims, accidents of two wheelers are because of high density roads, heavy traffic, rash or negligence driving, drunk & Drive and a Sleepy riding, many times even after the accidents, accidents will not be reported properly or even the medical aid or assistance will not be available to the riders

because of poor or no communication of the accidents, which leads to many number of the death in the recent years.

Xiaohua Zhao et. al.[3] : Drinking driving is responsible for a high proportion of traffic accidents. To study the effects of alcohol on drivers and driving performance, 25 drivers' subjective feelings and driving performance data in different blood-alcohol concentration (BAC) levels were collected with simulated driving experiment. The investigation results revealed that alcohol affected drivers in many aspects, including attitude, judgment, vigilance, perception, reaction, and controlling. The analysis of accident rate showed that higher BAC level would lead to higher accident rate. The statistical analysis results of driving performance indicated that average speed, speed standard deviation, and lane position standard deviation were significantly higher under the influence of alcohol.

Ilanchezian P et. al.[5] : At the present time, the number of accidents has enlarged speedily and in country like India per day there are about 204 accidents occurred. Accidents of two-wheeler compose a foremost segment of every accident and it can be true for the reason that twowheelers like bikes not able to produce as many as security measurements normally incorporated in cars, trucks and bus etc. General main rootcost of the two-wheeler accidents happen only when people community not remember to wearing a device helmet and during the driving time feels like sleep condition, alcohol disbursement, many of the drivers doesn't know heavy vehicles like Loory and buses approaching into very closer to their two wheelers, contravention of two wheelers in traffic rules and regulations

Md. Motaharul Islam et. al[7] : Nowadays overpopulated countries like Bangladesh have become a warzone where thousands of people lose their lives and even more become handicapped due to road accidents.. The number of bikes in Dhaka city has increased drastically. As bike accidents are becoming quite an alarming issue, we felt the need of an improved bike safety system. In this paper, we have proposed a system that detects bike accidents using MPU6050(gyro sensor and accelerometer), SIM808(GPS+GPRS+GSM), Raspberry Pi 3 Model B and Arduino Uno. We have placed the proposed system on the surface of the bike. If an accident occurs, the sensors will trigger and send a message containing the number and location of the biker to the hospitals, police stations and registered family members.

N. Srinivasa Gupta et. al.[5] : The main objective of this project is to avoid accidents which are occurred due to negligence of not wearing the helmet, drunk and drive and over speeding. This might cause severe major accidents often results in death. The smart helmet consists of alcoholic sensor, RF transceiver, Vibration sensor and Arduino, wearing helmet shall be made mandatory by the rider. It consists of alcohol sensor which is employed to prevent drunk and drive scenario by checking the breath of rider, and stops the motor if they are drunken or not wearing helmet and also prevents over speeding and rash driving by alerting the rider with a message on LCD and reducing the motor speed with the help of PWM technique. The vibration sensor is placed in the helmet for accident detection, whenever the helmet strikes the ground vibration sensor will senses the vibration and thus the accident is detected. If the rider met with an accident, to the registered mobile number using GSM module, an alert message will be sent.

Arokiaraj David et. al.[5] : The aim of this study is to bring down the accident level and to protect the driver's life. Various sensor modules were used to reduce vehicle accidents mainly due to drunken driving and over speed. It is detected through the alcoholic sensor sense alcohol presence while driving and this system also ensures that drivers' have to wear the helmet which operates through its pressure sensor placed in the helmet. This sensor identifies the drunken drivers and makes the helmet mandatory for vehicle users. These sensors are connected to engine ignition if a particular raider is not worn a helmet or alcoholic raiders/ drivers, then these sensors will not allow starting the engine. Even there is a vibrating sensor that functions during the accidental time, it will be sent the instant SMS message to a nearby hospital, local police station and to their family members through GPRS connection. by implementing this system in practical life can able to control and monitor each driver's status.

Mr. Bhosle Suraj V et. al.[2] : This project aims at design and development of Smart Helmet which provides and ensures safety to the biker. The system proposed here helps the rider to follow all the safety regulations while driving and in case of emergency sends the signals to the concern authority. This system is specifically mechatronic system which consist of conventional helmet embedded with multiple sensors. The Sensors incorporated in the helmet are Capacitive Sensor, Strap Switch and Alcohol sensor. The capacitive sensor has the ability to sense the contact pressure and ensures that biker wears the headgear. Strap switch ensures fastening of strap belt and alcohol detection sensor prevents the rider to drive when he consumes alcoholic drinks

CHAPTER 3

OBJECTIVE OF PROJECT

As the bikers in our country are increasing, the road accidents are also increasing day by day, due to which many deaths occur, most of them are caused due to most common negligence of not wearing helmets, also many deaths occur due to lack of prompt medical attention needed by the injured person. The raider mainly gets injured if he has consumed the alcohol or not wearing helmet

The objective of this project are

- To design device that can improve the safety of motorcyclist and can sense the alcohol consumption.
- The device can be fit in any type of helmet.
- To make device which will reduce accident and will help the society.
- To Implement smart helmet based ignition system in the vehicle which makes it compulsory to ride the helmets before starting the vehicle
- To Implement alcohol intoxication detection system which will forbid the ignition of the vehicle once the alcohol intoxication is detected.

CHAPTER 4

COMPONENTS

This section comprises an alcohol sensor, switch, the switch examines whether the rider is wearing a helmet or not and alcohol sensor senses the rider is intoxicated or not. The vehicle unit consists of the temperature sensor and fuel sensor

The main components are as follows:

4.1 ARDUINO.

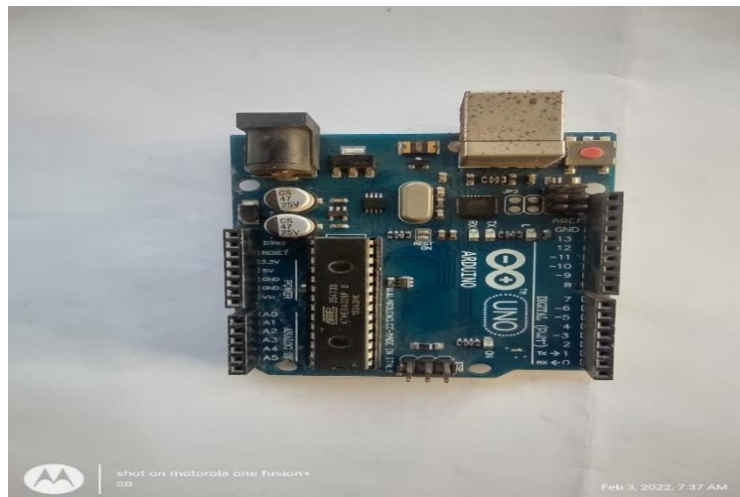


Fig 4.1 : Arduino

Arduino is an open-source hardware and software company, project, and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices. Its hardware products are licensed under a CC BY-SA license, while software is licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL), permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially from the official website or through authorized distributors [14].

Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to

various expansion boards ('shields') or breadboards (for prototyping) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs. The microcontrollers can be programmed using the C and C++ programming languages, using a standard API which is also known as the **Arduino language**, inspired by the Processing language and used with a modified version of the Processing IDE. In addition to using traditional compiler tool chains, the Arduino project provides an integrated development environment (IDE) and a command line tool developed in Go.

The Arduino project began in 2005 as a tool for students at the Interaction Design Institute Ivrea, Italy,^[2] aiming to provide a low-cost and easy way for novices and professionals to create devices that interact with their environment using sensors and actuators

Arduino Uno is a micro-controller board, The board has 14 digital I/O pins (six capable of PWM output), 6 analog I/O pins, and is programmable with the Arduino IDE. The word "uno" means "one" in Italian and was chosen to mark the initial release of Arduino Software. The Uno board is the first in a series of USB-based Arduino boards

4.2 RELAY



Fig 4.2 : Relay

Relay boards are computer boards with an array of relays and switches. They have input and output terminals and are designed to control the voltage supply. Relay boards provide independently programmable, real-time control for each of several onboard relay channels.

Relay boards are used in many different applications. Some products are used to control lights, motors, and other electronic devices in industrial and commercial applications. Others are also used to control heater temperatures, or are used in power switching applications. Relay boards that are designed for specific types of industrial equipment are also available [2].

Relay modules (or power relay modules) are ubiquitous electronic components. They are an exceedingly significant component of any home automation project. You will require a relay module if you use a low voltage microcontroller such as an Arduino to control motors or lighting circuits.

Relay modules are straightforward components. Essentially, they work as switches. Your average relay module comprises two internal metal contacts. Usually, these contacts do not connect or touch each other. However, relays include an internal switch connecting these contacts to complete an electrical circuit that allows current flow.

Relay modules do not work like manual light switches. To illustrate, when you switch on a light, you must press a button to connect the two metal contacts within it. Inversely, a relay switch uses electric pulses to turn its internal switch on and off.

You power a voltage power current on one side of the circuit that powers an electromagnetic coil which pulls the metal contacts together. Consequently, this allows the current to flow on the other side of the relay. Your Arduino Uno or Raspberry Pi can send a digital signal to the relay, which can then power whatever application you need.

4.3 LCD



Fig 4.3 : LCD

The LCD is a display module that is applied to the interface in the embedded module used to display the status of ignition instructed them whether to “turn-it-on” or “turn-it-off” the two-wheeler engine.[15]

A Liquid-crystal display (LCD) is flat-panel display or other electrically modulated optical device that uses the light-modulated properties of liquid crystal. LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images with low information content, which can be displayed or hidden.

- LCDs (Liquid Crystal Displays) are used in embedded system applications for displaying various parameters and status of the system.
- LCD 16x2 is a 16-pin device that has 2 rows that can accommodate 16 characters each.
- LCD 16x2 can be used in 4-bit mode or 8-bit mode.
- It is also possible to create custom characters.
- It has 8 data lines and 3 control lines that can be used for control purposes.

4.4 ALCOHOL SENSOR



Fig 4.4 : Alcohol Sensor

MQ3 Alcohol Sensor is a low-cost semiconductor sensor which is able to detect the presence of alcohol gases. It has high sensitivity and fast response time. The sensor outputs its values in terms of varying voltage (Analog output); therefore, the data can be obtained via the microcontroller using its built-in Analog-to-Digital converter.[3]

MQ3 is one of the most commonly used sensors in the MQ sensor series. It is a Metal Oxide Semiconductor (MOS) type of sensor. Metal oxide sensors are also known as **Chemiresistors**, because sensing is based on the change of resistance of the sensing material when exposed to alcohol. So by placing it in a simple voltage divider network, alcohol concentrations can be detected.

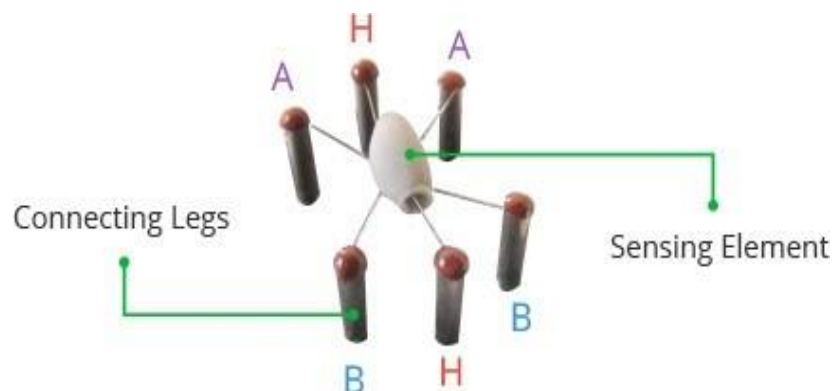


Fig 4.5 : Inner Casing

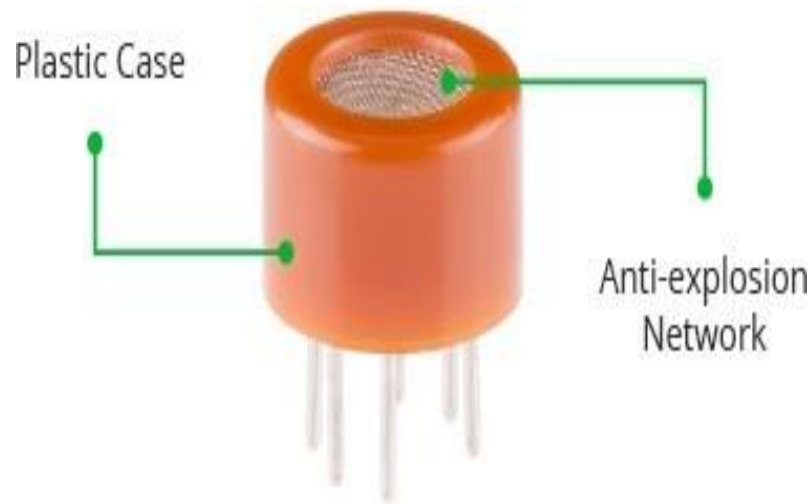


Fig 4.6 : Outer casing

This is what the sensor looks like when outer mesh is removed. The star-shaped structure is formed by the sensing element and six connecting legs that extend beyond the Bakelite base. Out of six, two leads (**H**) are responsible for heating the sensing element and are connected via a **Nickel-Chromium coil** (a well known conductive alloy).

The remaining four leads (**A & B**) responsible for output signals are connected using **Platinum Wires**. These wires are connected to the body of the sensing element and convey small changes in the current that passes through the sensing element.

4.5 TRANSISTOR



Fig 4.7 : Transistor

A transistor is a semiconductor device used to amplify or switch electrical signals and power. The transistor is one of the basic building blocks of modern electronics. It is composed of semiconductor material, usually with at least three terminals for connection to an electronic circuit. A voltage or current applied to one pair of the transistor's terminals controls the current through another pair of terminals. Because the controlled (output) power can be higher than the controlling (input) power, a transistor can amplify a signal. Some transistors are packaged individually, but many more are found embedded in integrated circuits.[16]

This transistor can be used to both conduct and insulate electric current or voltage. A transistor basically acts as a switch and an amplifier. In simple words, we can say that a transistor is a miniature device that is used to control or regulate the flow of electronic signals. Transistors are one of the key components in most of the electronic devices that are present today

4.6 RESISTOR



Fig 4.8 : Resistor

Resistors are electronic components which have a specific, never-changing electrical resistance. The resistor's resistance limits the flow of electrons through a circuit.[17]

They are **passive** components, meaning they only consume power (and can't generate it). Resistors are usually added to circuits where they complement **active** components like op-amps, micro-controllers, and other integrated circuits. Commonly resistors are used to limit current, divide voltages, and pull-up I/O lines.

4.7 BATTERY:



Fig 4.9 : The battery used in this project is 12 V 14AH sealed lead acid battery

The specifications of the battery are as follows:

Sl. No	Parameter	Value
1	Voltage	12 V
2	Current	14 Amp
3	Power	168 Watt

CHAPTER 5

WORKING PRINCIPLE

Driving under the influence is the crime of driving, operating, or being in charge of a vehicle while hindered by liquor or different medications, to a level that renders the driver incapable of handling a vehicle securely. It has been realized that alcohol use impedes driving abilities and increases accident risk. It has been discovered that while driving affected by liquor, the danger of having an accident causing injury or death increments exponentially. Drunk driving has a high likelihood of serious accidents. Even with a small amount of alcohol presumption, drivers are twice likely to be involved in traffic accidents than calm drivers. We propose a novel method to combine various factors and personalize for testing people, other than the normal approach. The various parameters considered for the proposed project are:

- a) Use Of Helmet
- b) Alcohol Content
- c) Fuel Level
- d) Engine Temperature

As shown in below block diagram the Arduino is connected to power supply of 5volt this Arduino contains 14 digital and 6 analog signals, for this signals sensors are connected accordingly in helmet, alcohol, furl, temperature sensors . The Arduino function is to catch the signals which is coming from the sensors and also check the condition statement then pass the output signals. This setup works on the basis of C programming language.

5.1 BLOCK DIAGRAM OF ELECTRONICS

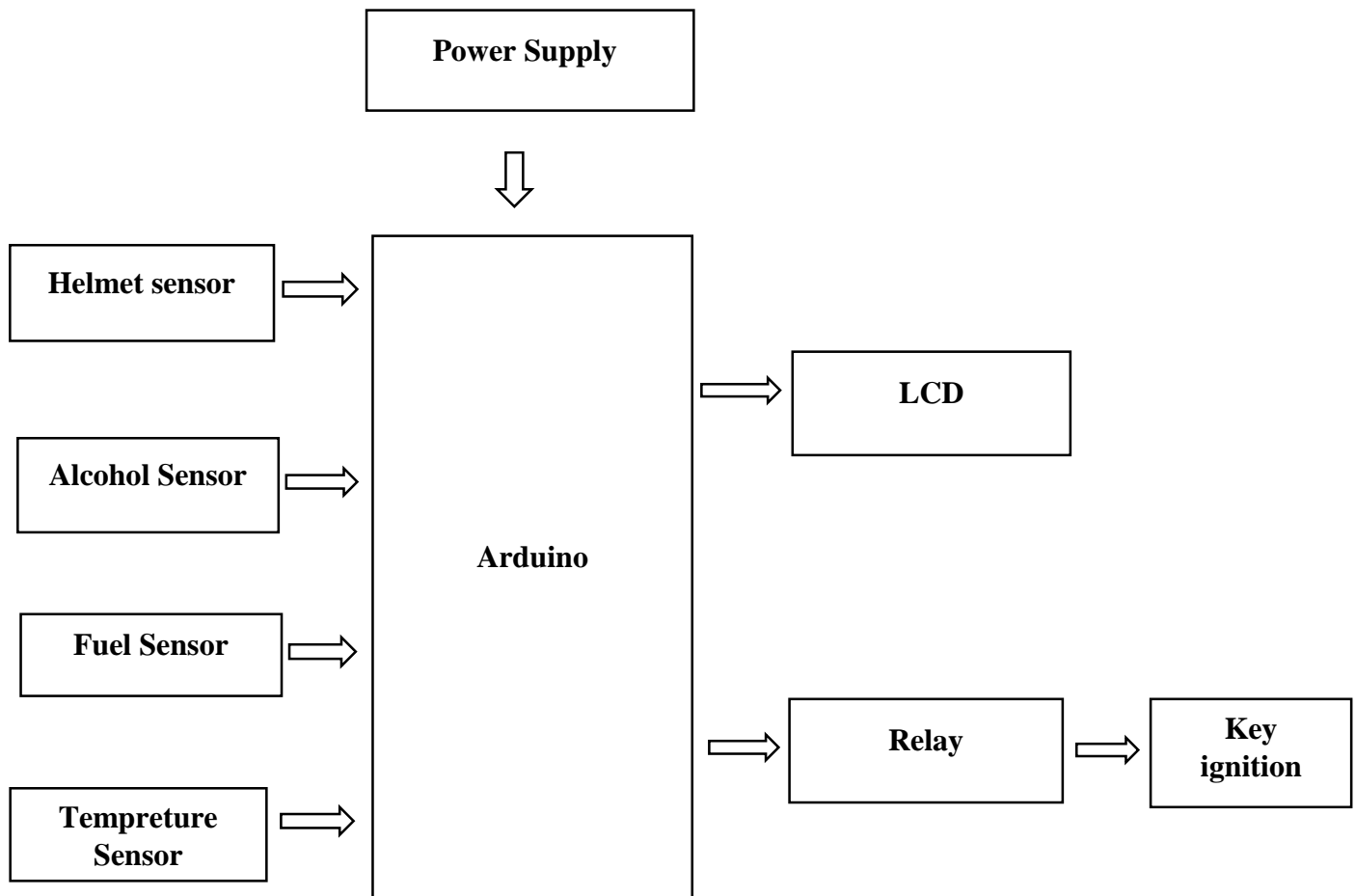


Fig 5.1 : Block Diagram Of Electronics

Here Arduino is used as micro controller for which further sensors are connected, here all the sensors collect data from their respective positions and all the data is sent to micro controller where all the data is inspected and further sent to relay.

- Relay takes the input from arduino and further sent to the ignition system where the ON and OFF of the vehicle is dependent.
- All the sensors are connected to its respective pin numbers allocated in the arduino with the help of wires and clips.
- The display is used to show whether the driver is wearing the helmet or not, It also shows the level of alcohol consumption by the driver, It shows the current fuel level in the vehicle and also displays the current engine temperature.

5.2 Circuit Diagram

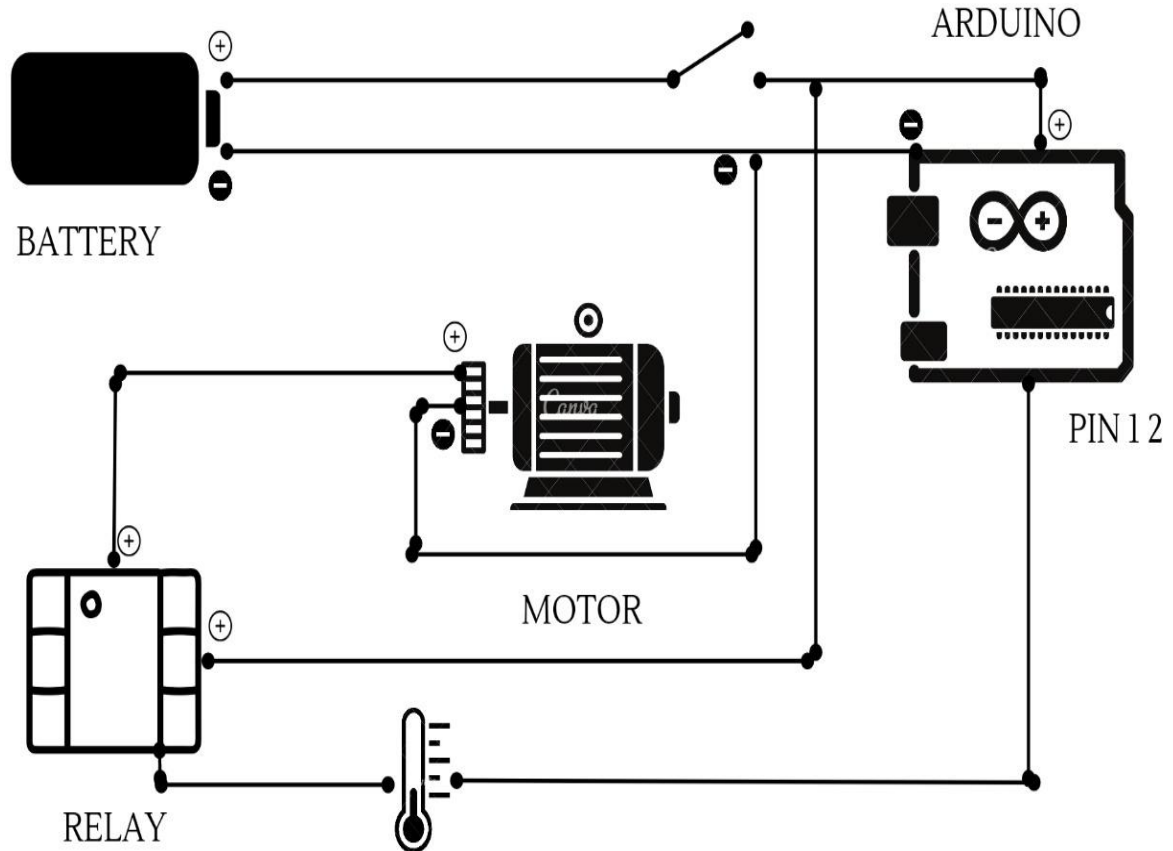


Fig 5.2 : Circuit Diagram Of Electronics

The above circuit diagram shows the circuit diagram of the arduino connected with the sensors. Both positive and negative end of the 12V battery is connected to the respective positive and negative end of the arduino. The sensors are connected to the arduino in their respective pin slots (i.e Arduino consists of digital and analog slots) if we require output in digital then sensors are connected in digital pins and if we require output in analog form then the sensors are connected in analog form. Positive end of the relay is connected to the motor or vehicle ignition and the negative end is connected to the arduino.

5.3 Placement of sensor

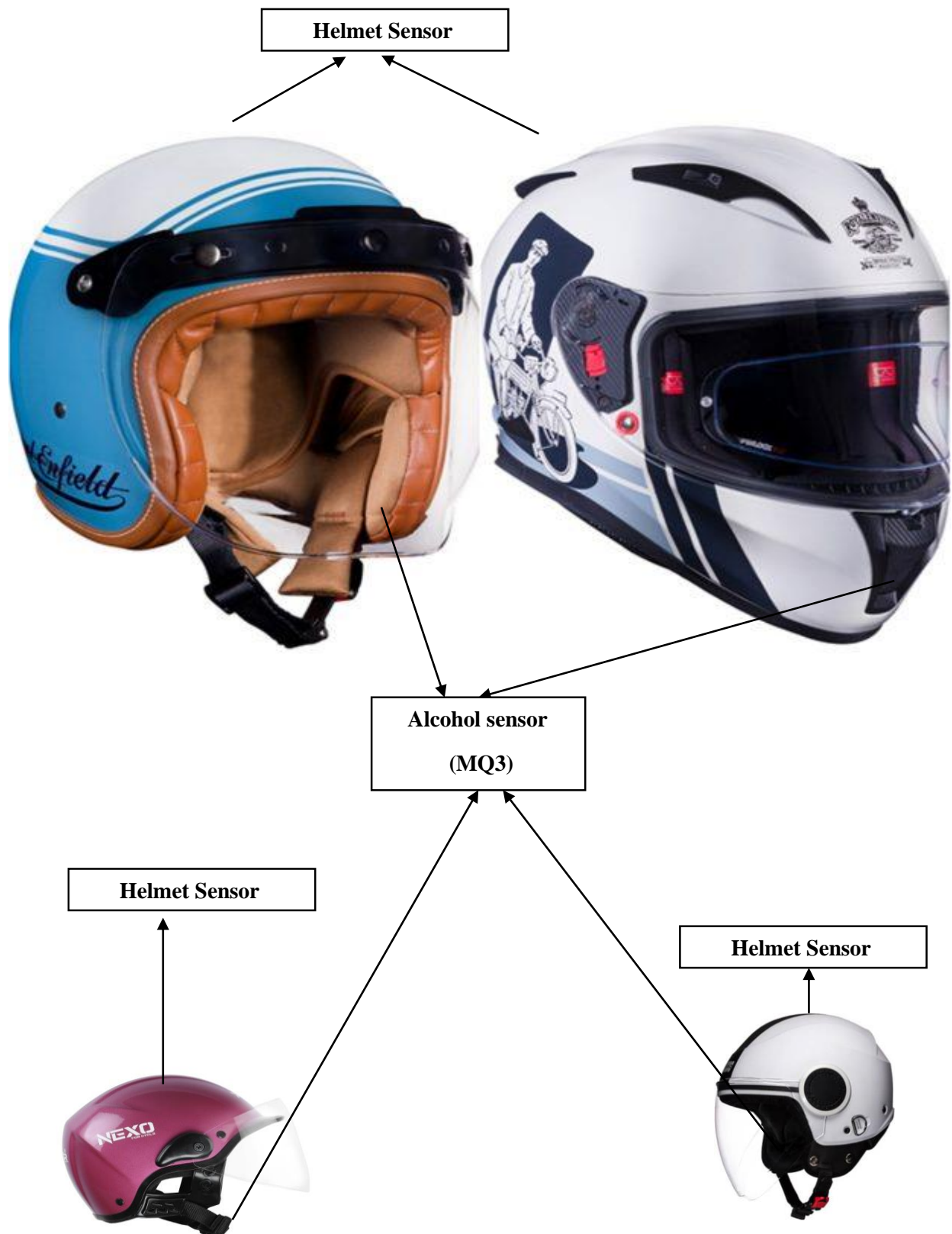


Fig 5.3 : Placement of Sensors in Helmet

In helmet the force sensing resistor is placed on inside upper part of the helmet where actually head will touch with sensor surface. And alcohol sensor is placed on in front of rider's mouth so that it can sense easily. And the battery and regular circuits were fixed on the bike.

The first step of project is it initializes all the port. And check weather helmet is wear or not. If Helmet is not wore then display Message "Please wear the helmet" will be displayed. Next step is to check the condition of drunk, if rider is drunk, display message "You are Drunk" and then send the message on LCD screen

A smart helmet is designed using Arduino If alcohol concentration is present in human breath, then it displays the message on LCD . Depending on the conditions, if true, the ignition starts and bike moves.

Detection of accident in remote area can be easily detected and medical services provided in short time. It will reduce the probability of accidents by simply avoiding drunken drive by using alcohol detector.



Fig 5.4 : sensors placed in helmet



Fig 5.5 : Display of College Name

LED board displaying name of the college for introduction. The name of the college is dumped into the display through coding in arduino IDE (coded in embedded C language). Anything data or name which should be displayed on the LED display should be coded in arduino IDE.



Fig 5.6 : Display of Wear Helmet

LED display giving instruction to the driver to wear the helmet to start the ignition system of the vehicle since the driver has attempted to start the vehicle without wearing the helmet or he may probably not wearing the helmet in proper way.



Fig 5.7 : Display of Alcohol level

LED display showing the level of alcohol consumption by the driver while he has attempted to start the vehicle after wearing the helmet. The unit of the level of the alcohol consumption is converted into electronic pulse by the micro controller.



Fig 5.8 : Display of No Alcohol Detection

LED display showing that the driver has not consumed any kind of alcohol after the alcohol sensor sensing the consumption of alcohol and sending the data to the arduino. Since there is no consumption of alcohol by the driver the vehicle is eligible to start since all the required safety conditions are satisfied.



Fig : 5.9 : Display of Fill fuel

LED display warning the driver to fill the fuel in the fuel tank of the vehicle since the level of the fuel has become less than the pre - defined level of the fuel



Fig 5.10 : Person wearing Helmet with sensors

CHAPTER 7**ARDUINO CODING**

```
#include <LiquidCrystal.h>
LiquidCrystal lcd(7, 6, 5, 4, 3, 2);

// helmet
#define limit A1
int limit_state=0;

// alchohal
#define sensorDigital 10
#define sensorAnalog A0
int alco_level=0;
int value;

// fuel level
#include <Ultrasonic.h>
Ultrasonic ultrasonic(8, 9);  //(trig,echo)
int distance;

// temperature
int cel;
int val;
int tempPin = A4;
```

```
const int relay=12;

void setup()
{
    lcd.begin(16, 2);
    lcd.print("  WELCOME");
    delay(1000);
    lcd.clear();

    lcd.setCursor(1, 0);
    lcd.print("JAIN COLLEGE");
    lcd.setCursor(0, 1);
    lcd.print("MECHANICAL DEPT");
    delay(1000);
    lcd.clear();

    lcd.setCursor(1, 0);
    lcd.print("  HOD");
    lcd.setCursor(0, 1);
    lcd.print("Dr. SREEDHAR BABU");
    delay(1000);
    lcd.clear();
}
```

```
    lcd.setCursor(1, 0);  
    lcd.print("    GUIDE");  
    lcd.setCursor(0, 1);  
    lcd.print("Dr. ANIL SHIRAHATTI");  
    delay(1000);  
    lcd.clear();  
  
    lcd.setCursor(1, 0);  
    lcd.print("SAFETY VEHICLE ");  
    lcd.setCursor(0, 1);  
    lcd.print("WITH ALCHOHAL DECT");  
    delay(1000);  
    lcd.clear();  
  
    pinMode(relay, OUTPUT);  
    pinMode(limit, INPUT_PULLUP);  
    pinMode(sensorDigital, INPUT);  
}  
  
void loop()  
  
    {
```

```
helmet();  
alcohol();  
fuel();  
temp();  
}  
  
void helmet()  
{  
    lcd.clear();  
    limit_state=digitalRead(limit);  
    while(digitalRead(limit)==1)  
    {  
        lcd.print("WEAR HELMET!!!!!!");  
        digitalWrite(relay,LOW);  
        delay(500);  
        lcd.clear();  
        delay(500);  
    }  
    lcd.print("HELMET ON");  
    digitalWrite(relay,HIGH);  
    delay(2000);  
    lcd.clear();  
}
```



```
void alcohol()
{
    lcd.clear();

    alco_level=analogRead(sensorAnalog);
    lcd.setCursor(1,0);
    lcd.print("Alcohol L: ");
    lcd.print(alco_level);
    delay(2000);
    lcd.clear();

    if(alco_level>500)
    {
        digitalWrite(relay,LOW);
        lcd.setCursor(0,1);
        lcd.print("Exceeded:");
        lcd.print(alco_level);
        delay(2000);
        lcd.clear();

    }

    else
    {
```

```
        lcd.clear();
        lcd.setCursor(0,1);
        lcd.print("NO Alcohol: ");
        digitalWrite(relay,HIGH);
        delay(2000);
        lcd.clear();

    }
}

void fuel()
{
    int distance=ultrasonic.read();
    lcd.setCursor(1, 0);
    lcd.print("FUEL LEVEL:");
    lcd.print(distance);
    delay(3000);
    lcd.clear();

    if(distance>7)

    {
        lcd.clear();
        lcd.setCursor(0, 1);
```

```
        lcd.print("FILL FUEL: ");
        delay(3000);
        lcd.clear();
    }

    else
    {
        lcd.clear();
        lcd.setCursor(0, 1);
        lcd.print("FUEL OK:");
        lcd.print(distance);
        delay(3000);
        lcd.clear();
    }

}

void temp()
{
    val = analogRead(tempPin);
    float mv = ( val/1024.0)*5000;
    float cel = mv/10;
    lcd.setCursor(0, 0);
    lcd.print("Temperature");
```

```
    lcd.setCursor(0, 1);  
    lcd.print(ce1);  
    delay(1000);  
    lcd.clear();  
  
if(ce1>37)  
{  
    lcd.setCursor(1, 0);  
    lcd.print("ENGINE HEATED");  
    digitalWrite(relay,LOW);  
    delay(2000);  
    lcd.clear();  
}  
else  
{  
    digitalWrite(relay, HIGH);  
    delay(3000);  
    lcd.clear();  
}  
}
```

```
    lcd.setCursor(0, 1);  
    lcd.print(ce1);  
    delay(1000);  
    lcd.clear();  
  
if(ce1>37)  
{  
    lcd.setCursor(1, 0);  
    lcd.print("ENGINE HEATED");  
    digitalWrite(relay,LOW);  
    delay(2000);  
    lcd.clear();  
}  
else  
{  
    digitalWrite(relay, HIGH);  
    delay(3000);  
    lcd.clear();  
}  
}
```

CHAPTER 8**APPROXIMATION COST**

Sl. NO.	Particulars	Amount
1	Arduino	600
2	LCD	300
3	Relay	50
4	PCB	100
5	Resistor	50
6	Transistor	50
7	Battery	1200
8	Motor	1000
9	Alcohol Sensor	250
10	Other	2000
	Total	5600

CHAPTER 9

CONCLUSION AND FUTURE WORK

This system is very effective for the safety purpose of the user. User has to wear helmet to ride two wheeler vehicle and hence traffic rules will follow with this. This system is under pocket control ie. Ride two wheeler vehicle having safety in hand and in budget also. Easy functioning to operate this system. It provides a better security to the biker.

The growing number of accidents inspires us to find solutions that are simple, elegant and effective. The expected result of this project is that it would ensure that only a sober person would drive a bike and thus reduce the number of accidents caused by drunk driving. The proposed project also ensures that the driver is wearing the helmet at all times while driving the bike.

The designed Smart helmet ensures the safety of the rider by making it necessary to wear helmet, and also ensures that the rider hasn't consumed alcohol more than the permissible limit. If any of these prime safety rules are violated, the proposed system will prevent the biker from starting the bike. The system also helps in efficient handling of the aftermath of accidents by sending a SMS with the location of the biker to the police station. This ensures that the victims get proper and prompt medical attention, if he/she met with an accident.

REFERENCE

- 1) V. R. Ghule, Hrushikesh Gujar, Shubham Gaikwad, Parmeshwar Bhande, "Smart Vehicle Analyzing System with service center alliance using mobile computing (VASS)", International Research Journal of Engineering and Technology (IRJET), vol no 04, Issue 04, April 2017, PP 1406-1413. International Journal of Science and Research (IJSR) ISSN (Online): 2319-7064 Volume 3 Issue 3, March 2014.
- 2) H.C. Impana, M. Hamsaveni and H.T. Chethana, "A Review on Smart Helmet for Accident Detection using IOT", EAI Endorsed Transactions on Internet of Things, Reasearch article EAI.EU, published on 14 May 2020, PP 1-6.EAI Endorsed Transactions on Internet of Things Online First.
- 3) G. Adarsh, Rahul P.R, Vishnu Santhosh, Assistant Professor Prof. Simi M.S, "Alcohol Drunk and Drive Accident Prevention System", International Journal of Scientific Research & Engineering Trends, PP 2457-2461. Volume 6, Issue 4, July-Aug-2020, ISSN (Online): 2395-566X
- 4) Nitin Agarwal, Anshul Kumar Singh, Pushpendra Pratap Singh, Rajesh Sahani, "SMART HELMET", International Research Journal of Engineering and Technology (IRJET), PP 19-22, volume 02: Issue: 02 May-2015, e-ISSN: 2395 -0056 p-ISSN: 2395-0072 www.irjet.net
- 5) Sharath P N, Dr. C Mallikarjuna, "Smart Helmet an Aid to Save Rider by Using Microcontroller", International Journal for Research in Applied Science & Engineering Technology (IJRASET), PP 2091-2095, ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429 Volume 9 Issue VII July 2021- Available at www.ijraset.com
- 6) Aman Deshmukh, Kunal Thool, Mahesh Theng, Praneet Pathe, Dr. Prashant Deshmukh, "smart vehicle safety system", International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering, PP 16-22, Vol. 9, Issue 6, June 2021, ISSN (Online) 2321-2004, ISSN (Print) 2321-5526.

- 7) Keesari Shravya, Yamini Mandapati, Donuru Keerthi, Kothapu Harika, and Ranjan K. Senapati, "Smart helmet for safe driving", Article in E3S Web of Conferences. January 2019, DOI: 10.1051/e3sconf/20198701023.
- 8) Deekshitha K I, Mrs. Pushpalatha S, "Implementation of Smart Helmet", International Journal of Engineering Research & Technology (IJERT), PP 1-4, ISSN: 2278-0181, Published by Volume 6, Issue 13 www.ijert.org.
- 9) Xiaohua Zhao, Xingjian Zhang, and Jian Rong, "Research Article Study of the Effects of Alcohol on Drivers and Driving Performance on Straight Road", Published on 23 February 2014 Hindawi Publishing Corporation Mathematical Problems in Engineering Volume 2014, Article ID 607652, 9 pages <http://dx.doi.org/10.1155/2014/607652>.
- 10) Ilanchezhian, Shanmugaraja, Thangaraj, Aldo Stalin JL, Vasanthi S, "A Review on Smart Two Wheeler Helmet with Safety System Using Internet of Things", IJCSNS International Journal of Computer Science and Network Security, VOL.21 No.6, June 2021, PP 11-15.
- 11) Md. Motaharul Islam, A. E. M Ridwan, Mekhala Mariam Mary, Md Fahim Siam, Sadia Anika Mumu, Mekhala Mariam Mary, Shohag Rana, "Design and Implementation of a Smart Bike Accident Detection System", 2020 IEEE Region 10 Symposium (TENSYP), 5-7 June 2020, Dhaka, Bangladesh, 978-1-7281-7366-5/20/\$31.00 ©2020 IEEE.
- 12) N. Srinivasa Gupta, M. Nandini, N. Sowjanya, L. Pardha Sai, K. Sai, "Smart System for Rider Safety and Accident Detection", International Journal of Engineering Research & Technology (IJERT), Published on Vol. 9 Issue 06, June-2020 www.ijert.org, PP 154-157.
- 13) Mr. Bhosle Suraj V, Dr. P. D. Pantawane, "Innovative Applications of Smart Sensors for the Bike Helmet to Reduce the Accidents & To Enhance Safety of the Rider", International Journal of Engineering Research & Technology (IJERT), Published on Vol. 8 Issue 06, June-2019, www.ijert.org, PP 1296-1301.

- 14) Article on Arduino, Wikipedia, <https://en.wikipedia.org/wiki/Arduino>
- 15) Arokiaraj David , A. Muthukumar, Ayyappan & Srivel Ravi, "Accident Avoidance System by using Sensors Module", Article Info Volume 82 Page Number: 11123 - 11133
Publication Issue: January-February 2020, PP-11128, Published by: The Mattingley Publishing Co., Inc.
- 16) Article on Transistor, Wikipedia, <https://en.wikipedia.org/wiki/Transistor>.
- 17) Article on Resistors, <https://www.aepint.nl/components/products/resistors/?cn-reloaded=1>.