

**Smart Accident Detection and Theft Controlling
Using IOT Technology**

submitted in partial fulfilment of requirements for the award of
Bachelor of Engineering

In

Electronics and Communication Engineering

By

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SCHOOL OF ELECTRICAL AND ELECTRONICS

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited With Grade “A” By NAAC

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BONAFIDE CERTIFICATE

This is to certify that this project report is the bonafide work of Komali Venkata Snehith (39130234) and G.Dheeraj Kumar (39130115) who carried out the project entitled "**SMART ACCIDENT DETECTION AND THEFT CONTROL SYSTEM USING IOT TECHNOLOGY**" under our supervision from Jun-2022 to Oct-2022.

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DECLARATION

We KOMALI VENKATA SNEHITH (39130234) and G. DHEERAJ KUMAR (39130115) Here by declare that the project entitled “**Smart accident detection and theft control system using IOT technology**” done by us under the guidance of **Dr. Mathan N., M.Tech.,Ph.D** at the Sathyabama Institute of Science and Technology, Chennai-600119 is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in Electronics and Communication Engineering.

1.



2.



DATE: 15.04.23

PLACE: CHENNAI

SIGNATURE OF THE CANDIDATES

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ABSTARCT

Road accidents are increasing in our country, most of them are caused due to negligence of drink and drive and over speeding which many leads to death or severe injuries due to lack of medical treatments provided to the injured person at right time. The main objective of this system is to design a accident detection and theft control that provides safety to motorcyclist and to prevent drink and drive. It detects accident and alert the guardian about accident and prevents over speeding and to develop an android application to monitor motorcyclist and send alert SMS. The health parameters of the driver is updated to the family members and well wishers. Then receiver the send the those driver details directly to the cloud. This paper describes the prototype of theft control using IOT, which ensures the safety and security of the bike rider. Nowadays automobiles technologies are rapidly increase each and every year and also each every second accident count also increase. so while using some technologies like automatic accident detection system. it will be used to send information about the accident to the near by hospitals. the given sensor is connected to the Arduino and it is just record the various driving data parameters. the system is having external sensor like vibration sensor, accelerometer, alcohol sensor and global positioning system to collect the data and to send the position of the vehicle. In a developing nation like India, with advancement in the transportation technology and rise in the total number of vehicles, road accidents increases rapidly. Two wheelers accounts for 25% of total road crash death. This project provides an intelligent system for two wheeler accident prevention and detection for human life safety. The prevention part involves, Smart Helmet, which automatically checks whether the person is wearing the helmet

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

In recent times helmets have been made compulsory in Telangana State. Traffic accidents in India have been increased every year. As per Section 129 of Motor Vehicles Act, 1988, every single person riding a two-wheeler is required to wear protective headgear following the standards of BIS (Bureau of Indian Standards). Also, drunken driving under the influence (DUI) is a criminal offence according to the Motor Vehicle Act 1939, which states that the bike rider will get punishment. Currently, bike riders easily escape from the law [1]. These are the three main issues which motivate us for developing this project. The first step is to identify whether the helmet is worn or not. If the helmet is worn, then ignition will start; otherwise, it remains off. For this, a Force Sensing Sensor (FSR) sensor is used. The second step is alcohol detection[2]. An alcohol sensor is used as a breath analyser which detects the presence of alcohol in the rider's breath and if it exceeds the permissible limit, ignition cannot start. It will send a message to the number saying that "Rider is drunk and is trying to ride the bike". An MQ-3 sensor is used for this purpose. When these two conditions are satisfied, then only ignition starts. The third main issue is accident and late medical help. If the rider has met with an accident, he may not receive medical help instantly, which is one of the main reasons for death. Every second person dies due to delay in medical help, or in the case where the place of accident is unmanned. In fall detection, we place an accelerometer in the bike unit. By this mechanism, accidents can be detected. The aim of this project is to make a protection system in a helmet for the safety of bike rider. The smart helmet that is made is fitted with different sensors responsible for detection[3].

1.2 OBJECTIVES:

There are two main units in this project. Each unit uses a microcontroller. Signal transmission between the helmet unit and bike unit is done using an RF module. In less developed countries, road traffic accidents were the most significant cause of injuries, ranking eleventh among the most important causes of lost years of healthy life. In Indian

road system, widening of the road is not an alternative solution to avoid traffic in such a cities. The problems with state drunk driving control systems can be solved in many ways. The most effective will follow several principles: They will invest authority and responsibility in people and organizations at all levels, local to national, because drunken driving control requires action at all levels. They will operate in the public eye, using the media to report on problems and solutions, because ultimate decisions on priorities and resources to control drunk driving must have public support. They will not promise instant solutions based on a single action but rather will take steady steps towards long-term improvement. And they will establish mechanisms for identifying and solving problems rather than attempting to apply one-size fits-all methods. Hence Road Safety becomes a major issue of concern. Therefore it becomes necessary to implement such a technique which is not easy to bypass the basic rule of wearing helmet and to avoid drunken driving. Here we designed a system which checks the two conditions before turned ON the engine of the bike. Our system includes an alcohol sensor and a helmet sensing switch. A switch is used to detect whether the biker is wearing helmet. Alcohol sensor is used to detect the biker is drunk, the output is fed to the MCU. Both the switch and the alcohol sensor are fitted in the helmet. If any of the two conditions are violated the engine will not turned ON. Alcohol sensor MQ3 is used here for detecting the alcohol concentration present in the driver's breath. Sensor provides an analog resistive output based on the alcohol concentration. MCU is the microcontroller unit, which controls all the functions of other blocks in this system. MCU takes or read data from the sensors and controls all the functions of the whole system by manipulating these data.

1.3 MOTIVATION:

Alcohol sensor is connected to the MCU through an interfacing circuit and the helmet sensing switch is directly connected to the MCU. MCU receives data from these sensors and it gives a digital data corresponding to the output of sensors to the encoder only if the two conditions are satisfied. A traffic accident is defined as any vehicle accident occurring on public highway roads .The thought of developing this project comes to do some good things towards the society. Two wheeler accidents are

increasing day by day and lead to loss of many lives. The main aim of our project is to build a safety system which is integrated with the smart helmet and intelligent bike to reduce the probability of two-wheeler accidents. If any accident occurs no persons at place where to give information to the ambulance or parents. 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. Smart helmet focusing on three major applications which are helpful in our day to day life. At first and most one is the ignition of the bike will not on if we are not wearing the helmet. Secondly alcoholic driving is not possible by using this smart helmet. If the rider is alcoholic, the bike will not start. Third application is accident detection. If person met with an accident, no one is there to help him and simply leaving or ignoring the person, In such situation informing to ambulance or family members through mobile to rescue him for an extent. Various technologies are now available for bike rider safety. Wireless communication between bike to helmet and bike to traffic signal and speed breaker. The system will be comprised of a helmet module including stereo speakers and microphone, and a bike mounted base unit. The system will make use of different wireless communication protocols including ZigBee and another radio frequency protocols. when the rider or driver driving a bike he don't know where the speed breakers are there. By using RF technology they will find out where the speed breakers are there. Smart Helmet with Sensors for Accident Prevention, the microcontroller used in the system is Peripheral Interface Controller (PIC). Force Sensing Resistance (FSR) and the speed sensor are used as sensors to operate this system. Signal transmission between the two circuits is using a radio frequency concept. 315 MHz Radio Frequency Module is used since the range between the circuits is short. Drawback of this work as the motorcycles engine will only start is the helmet is worn and the belt has been buckled. A Solar Powered Smart Helmet With Multifeatures .In this helmet have multi features like Engine control system with the smart, in built Bluetooth system ,accident alert system, emergency alert switch (it gives the emergency message to police or family members) and cell phone charging with the solar power. Accidental Avoidance and Cabin Safety System for Automobiles .This system endures mainly with two modules namely Gas sensing module and Obstacle

detection module these are interfaced with ATmega16 microcontroller. IR sensors transmit signal from its sensor head and INTERNATIONAL JOURNAL OF CURRENT ENGINEERING AND SCIENTIFIC RESEARCH (IJCESR) ISSN (PRINT): 2393-8374, (ONLINE): 2394-0697, VOLUME-5, ISSUE-5, 2018 30 again receive the signal reflected from an obstacle and instruct the microcontroller which alerts the driver with an alarm and controls the vehicle by stopping it. The gas sensor here is mounted inside the vehicle detects the level of the toxic gases it informs to the microcontroller which alerts the persons inside the vehicle with an alarm. Smart Helmet Using GSM and GPS Technology for Accident Detection and Reporting System, vibration sensors are placed in different places of helmet where the probability of hitting is more which are connected to microcontroller board. So when the rider crashes and the helmet hit the ground, these sensors sense and then controller extract GPS data using the and when the data exceeds minimum stress limit then GSM module automatically sends message to ambulance or family members.

The sensor can measure the static acceleration of gravity in tilt sensing applications, as well as dynamic acceleration resulting from motion, shock, or vibrations. Road accidents are increasing day by day because the riders are not using the helmet and due to consumption of alcohol. In today's world, huge numbers of people are dying on road accidents. By using smart helmet, the accidents can be detected. The main target of the project is designing a smart helmet for accident avoidance and alcohol detection. The IR sensor checks if the person is wearing the helmet or not. The Gas sensor recognizes the alcoholic substance in the rider's breath. If the person is not wearing the helmet and if he consumes alcohol, the bike will not start. If there is no sign of alcoholic substance present and helmet is used, then only the bike will start. At the point when the rider met with an accident, the sensor recognizes the condition of the motorbike and reports the accident. Then the GPS in the bike will send the location of the accident place to main server of the nearby hospitals.

Fatal Road accidents can be easily avoided by understanding the psychological state of drivers. Majority of road accidents occur during night driving due to drowsiness state of vehicle drivers (Subject). This paper provides Eye Blink Monitoring System (EBM)

that alerts the subject during state of drowsiness. An embedded system based on psychological state of Subject by monitoring eye movements and head movements are useful in warning drivers during initial sleep cycle phase of drowsiness. The physiological sleep state analysis of subject can be determined by monitoring subjects eye-blink rate using an IR sensor and head movement using an accelerometer. A normal eye blink rate has no effect on the output of the system. However, if subject is in extreme state of sleep-cycle, then IR sensor receives abnormal eye blinking rate & an alarm is initiated to wake the subject. An Internet of Things (IOT) enabled sensors are used to transmit the entire data collected by sensors over a smart grid network for quick response team to take actions under emergency conditions.

The Internet of Things (IOT) is the interconnection of uniquely identifiable embedded computing devices within the existing Internet infrastructure. Typically, IOT offers advanced connectivity of devices, systems, and services that goes beyond machine-to-machine communications (M2M) and covers a variety of protocols, domains, and applications. The interconnection of these embedded devices (including smart objects), is implemented in nearly all fields of automation enabling advanced applications like a Smart Grid. The term —thingsll in the IOT refers to a wide variety of devices such as heart monitoring implants, biochip transponders on farm animals, electric clams in coastal waters, automobiles with built-in sensors, or field operation devices that assist fire-fighters in search and rescue. Current market examples include thermostat systems and washer/dryers that utilize Wi-Fi for remote monitoring. In this project we are presenting an internet based system entitled ‘Eye Blink and head movement Monitoring System’ which will help drivers to alert in drowsiness. This system is based on principle of monitoring eye movements of driver continuously using an IR sensor and head movement using accelerometer. If he/she falls asleep, then an alarm will ring to wake him/her up. Integration with the Internet implies that devices will utilize an IP address as a unique identifier. However, due to the limited address space of IPv4 (which allows for 4.3 billion unique addresses), objects in the IOT will have to use IPv6 to accommodate the extremely large address space required. Objects in the IOT will not only be devices with sensory capabilities, but also provide actuation capabilities (e.g., bulbs or locks controlled over the Internet). Largely, the future of the Internet of Things will not be

possible without the support of IPv6; and consequently the global adoption of IPv6 in the coming years will be critical for the successful development of the IOT in the future.

In this project we are implementing EBM (Eye Blink Monitoring Technique) to detect drowsiness of night drivers and preventing accidents. The other technologies that detect Drowsiness are EEG or Brain waves monitoring technique. Such a technique requires sophisticated system to map or monitor the brain of subject and determine the state of drowsiness based on the neurological sleep cycle. Though EEG technique is accurate to a larger extent, yet it is not cost effective and has a difficult implementation. On the other hand Eye Blink Monitoring Technique is dependent on physiological state of sleep of the subject and by understanding it, drowsiness can be detected and accident can be prevented. Drowsiness causing accident can be effectively prevented by designing an embedded system that is efficient enough to take critical decisions during emergency conditions. Majority of accident prevention systems come into picture when accident happens, however the proposed system is equipped with advantage of taking decisions by analyzing the symptoms of accident causing events. Brain wave technique only measures the drowsiness level but, EBM technique can be interfaced with a network of sensors in a cost effective manner to provide an efficient accident prevention system. The following key points were considered while estimating the feasibility and wide expansion of IOT based devices

Vehicle accidents are most common due to the imperceptibility of obstacles. Obstacles can strike the vehicle and causes severe damage. In order to reduce the number of crash and collision, 4 ultrasonic sensors are fixed on the four sides of the vehicle. These sensors detect the obstacles and gives notification through the LCD display and alarm sound. Temperature sensor is used to know the engine temperature. If the engine's temperature is above the predefined temperature, then it indicates through alarm and cooling fan will be turned ON. Micro Electro Mechanical System(MEMS) sensor first calculate the X,Y,Z co ordinate of the vehicle, if there is any significant form of changes occurs, then the image of that location will be shared to the concern person and their family's smart phone. The shared location helps for the Rescue team and the police

control room for the rescue operation. By this idea human lives can be saved and prevents the vehicle from damage.

In less developed countries, road traffic accidents were the most significant cause of injuries, ranking eleventh among the most important causes of lost years of healthy life. In Indian road system, widening of the road is not an alternative solution to avoid traffic in such a cities. The problems with state drunk driving control systems can be solved in many ways. The most effective will follow several principles: They will invest authority and responsibility in people and organizations at all levels, local to national, because drunken driving control requires action at all levels. They will operate in the public eye, using the media to report on problems and solutions, because ultimate decisions on priorities and resources to control drunk driving must have public support. They will not promise instant solutions based on a single action but rather will take steady steps towards long-term improvement. And they will establish mechanisms for identifying and solving problems rather than attempting to apply one-size fits-all methods. Hence Road Safety becomes a major issue of concern. Therefore it becomes necessary to implement such a technique which is not easy to bypass the basic rule of wearing helmet and to avoid drunken driving. Here we designed a system which checks the two conditions before turned ON the engine of the bike. Our system includes an alcohol sensor and a helmet sensing switch. A switch is used to detect whether the biker is wearing helmet. Alcohol sensor is used to detect the biker is drunk, the output is fed to the MCU. Both the switch and the alcohol sensor are fitted in the helmet. If any of the two conditions are violated the engine will not turned ON. Alcohol sensor MQ3 is used here for detecting the alcohol concentration present in the driver's breath. Sensor provides an analog resistive output based on the alcohol concentration. MCU is the microcontroller unit, which controls all the functions of other blocks in this system. MCU takes or read data from the sensors and controls all the functions of the whole system by manipulating these data. Alcohol sensor is connected to the MCU through an interfacing circuit and the helmet sensing switch is directly connected to the MCU. MCU receives data from these sensors and it gives a digital data

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Road accidents are increasing day by day because the riders are not using the helmet and due to consumption of alcohol. In today's world, huge numbers of people are dying on road accidents. By using smart helmet, the accidents can be detected. The main target of the project is designing a smart helmet for accident avoidance and alcohol detection. The IR sensor checks if the person is wearing the helmet or not. The Gas sensor recognizes the alcoholic substance in the rider's breath. If the person is not wearing the helmet and if he consumes alcohol, the bike will not start. If there is no sign of alcoholic substance present and helmet is used, then only the bike will start. At the point when the rider met with an accident, the sensor recognizes the condition of the motorbike and reports the accident. Then the GPS in the bike will send the location of the accident place to main server of the nearby hospitals.

In recent times helmets have been made compulsory in Telangana State. Traffic accidents in India have been increased every year. As per Section 129 of Motor Vehicles Act, 1988, every single person riding a two-wheeler is required to wear protective headgear following the standards of BIS (Bureau of Indian Standards). Also drunken driving under the influence (DUI) is a criminal offence according to the Motor Vehicle act 1939, which states that the bike rider will get punishment. Currently bike riders easily escape from the law [1]. These are the three main issues which motivates us for developing this project. The first step is to identify whether the helmet is worn or not. If helmet is worn then ignition will start otherwise it remains off. For this, Force Sensing Sensor (FSR) sensor is used. The second step is alcohol detection[2]. Alcohol sensor is used as breath analyser which detects the presence of alcohol in rider's breath and if it exceeds permissible limit ignition cannot start. It will send message to the number saying that "Rider is drunk and is trying to ride the bike". MQ-3 sensor is used for this purpose. When these two conditions are satisfied then only ignition starts. The third main issue is accident and late medical help. If the rider has met with an accident, he may not receive medical help instantly, which is one of the main reasons for death. Every second people dies due to delay in medical help, or in the case where

the place of accident is unmanned. In fall detection, we place accelerometer in the bike unit. By this mechanism accidents can be detected. The aim of this project is to make a protection system in a helmet for the safety of bike rider. The smart helmet that is made is fitted with different sensors responsible for detection[3]. There are two main units in this project. Each unit uses a microcontroller. Signal transmission between the helmet unit and bike unit is done using a RF module.

CHAPTER 2

LITERATURE SURVEY

KiranSawant et al. created an accident alert system using GSM and GPS modem and Raspberry Pi. A piezoelectric sensor first senses the occurrence of an accident and gives its output to the microcontroller. The GPS detects the latitude and longitudinal position of a vehicle. The latitudes and longitude position of the vehicle is sent as message through the GSM. The static IP address of central emergency dispatch server is pre-saved in the EEPROM. Whenever an accident has occurred the position is detected and a message has been sent to the pre-saved static IP address.

Mrs. ManasiPatil et al. described a better traffic management system using Raspberry pi and RFID technology. The vehicle has a raspberry pi controller fixed in it which is interfaced with sensors like gas sensor, temperature sensor and shock sensor. These sensors are fixed at a predetermined value before accident. When an accident occurs the value of one of the sensor changes and a message to a predefined number (of the ambulance) is sent through GSM. The GPS module which is also interfaced with the controller also sends the location of the vehicle. When the message is received by the ambulance, a clear route has to be provided to the ambulance. The ambulance has a controller ARM which is interfaced with the RFID tag sends electromagnetic waves. When an ambulance reaches the traffic signal the RFID reader which is placed on the joints detect the electromagnetic waves of the tag. If the traffic signal is red, then the readers goes through the database in fraction of seconds and turn the red light green. And automatically in such condition the RFID on opposite joints turn the opposite signal red. This provides a clear route tothe ambulance.

V.Sagar Reddy et al., developed an accelerometer based System for driver safety. The system has the advantage of tracking or identifying vehicles location just by sending a SMS or email to the authorized person. The system is designed by using Raspberry Pi (ARM11) for fast access to accelerometer for event detection. Is there any event is occurs the message sent to the authorized person so they can take immediate action to save the lives and reduce the damages. Images captured by the camera on the vehicle

are emailed to the concerned person (for example the owner of the vehicle) along with the type of accident and the time of the accident.

Sri Krishna ChaitanyaVarma et al., proposed an Automatic Vehicle Accident Detection and Messaging System Using GPS and GSM Modems. AT89C52 microcontroller is used in the system. When the system is switched on, LED is ON indicating that power is supplied to the circuit. When the IR sensors that are used sense any obstacle, they send interrupt to microcontroller. The GPS receives the location of the vehicle that met with an accident and gives the information back. This information is sent to a mobile number as a message. This message is received using GSM modem present in the circuit. The message gives the information of longitude and latitude values. Using these values the position of the vehicle can be estimated

Apurva Mane et al., described the methods for vehicle collision detection and remote alarm device using Arduino. Key features of this design include real-time vehicle monitoring by sending its information regarding position (longitude, latitude), time, and angle to the monitoring station and to the user/owners mobile that should help them to get medical help if accident or the theft occurs. Also user/owner has an access to get real-time position of a vehicle in real time. Whenever accident occurs MEMS and vibration sensor detects and sends the signals to microcontroller, by using GPS particular locations where accident has occurred is found, then GSM sends message to authorized members

Prof. Mrs. Bhagya Lakshmi V et al. proposed a FPGA Based Vehicle Tracking and Accident Warning system using GPS. FPGA is mainly used to track position of any vehicle and send automated message to preprogrammed number. The owner of vehicle, police to clear traffic, ambulance to save people can be informed by this device. FPGA controls and co-ordinate all parts used in system. With the help of accelerometer sensor, the exact position of the vehicle can be detected. It can also be predicted whether the vehicle is in normal position or upside down

Tushar Raut et.al The Author has discussed safety and security of the riders in contradiction of accident. Measuring the alcohol level of the bike rider and checking the speed of the bike is the main advantage of this project. The ignition will be off if the

alcohol level crosses the predefined value. It also has the GPS. By using this location of the accident happen is detected. And it sends the sms to the concerned people.

Lakshmi Devi P et.al This project explains about the Zigbee transmitter and Zigbee receiver. This project has done only with the purpose of accident information to the concerned people. Here when ever the accident is happened, the location of the accident is send to the noted mobile number. The disadvantage is that the helmet cost is still high and it is of only one purpose.

Smart Helmet by Kajal Thakare, systems which are already implemented are using various sensors such as FSR sensor, Alcohol sensor, Vibration sensor. In some cases for detecting the road accidents and locating the address GSM and GPS techniques are used. The bioelectric sensors for monitoring Brain, Cardiac and Respiratory Activity. Hence smart helmet is a special idea which makes motorcycle driving safer than before.

Alcohol detection by AbhinavAnand, mainly to detect the alcohol drunken people.MQ-3 sensors are used here to detect the alcohol content in the breath and if the rider is alcoholic the bike will not start.Communication possible by using RF module. Intelligent accident identification and location display system This system has been developed and implemented using the smart sensors and LPC2148 controller based mobile technology. If the accident occurred then this system immediately transmit the location of the accident and persons heart beat status to the emergency care centre phone number through SMS. Bike rider's safety using helmet.The system design will be such that without wearing the helmet the rider cannot start two wheelers. The helmet will be connected to vehicle key ignition systems which will be electronically controlled. Smart Helmet For Indian Bike Riders , provides an excellent alternative to the existing accidental avoidance

Lakshmi Devi P et.al. These include Hi-tech helmet and an electronic system which can be applied in mechanical system as two wheelers to avoid accidents on roads by compulsion of wearing helmet II. TECHNICAL STUDY The technics here we used in our project are alcohol detection and accident prevention. The ignition of the bike starts only

if we wore the helmet. For the above applications three sensors and GPS GSM interfacing also used. A. FLEX SENSOR The Flex sensor is used to detect weather the helmet is worn or not. Here the flex sensor is connected with the Arduino in the helmet unit. It is a flex sensor which is 2.2 inches in length. This sensor works by bending the sensor itself. As the sensor is being flexed or bent, the resistance across the sensor increases. The greater the angle of bending, the greater the resistance. This can be tested with multimeter.

A hybrid GPS-GSM localization of vehicles Tracking System has been developed by **Al-Khedher** that portrays an incorporated GPS-GSM framework to track vehicles utilizing Google Earth application. The remote module has a GPS mounted on the moving vehicle to recognize its present position, and to be exchanged by GSM with different parameters procured by the car's information port as a SMS to a beneficiary station. The received GPS directions or coordinates are sifted utilizing a Kalman filter to upgrade the precision of measured position. After information processing, Google Earth application is utilized to view the current area and status of every vehicle. This objective of this framework is to oversee armada, police cars dissemination and auto burglary alerts.

J.M. Hu describes vehicles against robbery framework utilizing GSM and GPS module. The framework is created utilizing fast blended sort single-chip C8051f120 and stolen vehicle is discovered by the utilization of vibration sensor. The framework stays in contact with auto holder through the GSM module, for the safety and reliability of car.

H. M. Sherif, M. A. Shedid and S. A. Senbel, designed a “Real time traffic accident detection system using wireless sensor network” using Wireless Sensor Network and RadioFrequency Identification technologies. In this they have explained the hardware prototype setup, the algorithms used, configuration of the setup advantages and the limitations of the entire system. The sensor in the vehicle is used to detect the accident happened. The sensor then sent the control to microcontroller. The microcontroller is used to send the alert message to respective members. They track the location where the accident has occurred using GPS and directs the alert message to the respective authorities using GSM

Joshi and Mahajan, The utilization of ARM 7 microcontroller, GSM and GPS module together with an accelerometer and temperature sensor is carried out. The GPS and GSM module is being utilized for following the area of vehicle. The extra part is being included is the accelerometer which essentially contains the MEMS sensor offering a low pass filter and is fundamentally utilized for Shake Detection, Orientation Detection and Tap Detection. The utilization of temperature sensor is additionally being carried out with a specific end goal to acquire the vehicle engine temperature which changes over the estimation of temperature into electrical signal.

2.1 IOT BASED SMART VEHICLE AND ACCIDENT PREVENTION SYSTEM

It gives an idea about the accident prevention system and vehicle theft system. Nowadays accidents and vehicle theft cases of two-wheelers are increasing at an alarming rate. Speed is the cause of most number of traffic accidents. The number of two-wheelers on the road is more than four-wheelers and eight wheelers. It has been estimated by WHO (World Health Organization) that there is an increase in the number of deaths due to accidents by two wheelers than fourwheelers. Bike-theft is a major problem; several underlying problems have led to this increase in bike-theft. Traditional solution for accident detection uses the Global Positioning System (GPS) to get the location of the accident and a message is sent through a microcontroller or a mobile device. The survey conducted by Government of India during the year 2010, says that there were close to 5 lakh accidents happened, which resulted in more than 1.3 lakh deaths and inflicted injuries on 5.2 lakh persons. These numbers translate into one road accident every minute, and one road accident death every 4 minutes. Over speeding is the main cause when it comes to road accidents in the city. Statistics available with the traffic police shows that nearly 27% of the total accidents are taking place due to over speeding. Exceeding the lawful speed limit is the single biggest reason for road accidents. This led to the creation of accident prevention system where you can access the speed limit. Every year nearly 36,000 vehicles worth Rs.115 crore are stolen in India. Only about 15,000 are traced, often in un road worthy condition, with many components missing. These are stolen because the thief is given the opportunity. As a

result, The increasing advantages of accident prevention and vehicle theft system now are at highest position thus as a result it provides an estimated and immediate help to the individual. The application for the accident prevention system and vehicle theft system is useful for the security and enhancing the awareness of the accident prone and theft prone scenarios for the secured and well-being of the individual. One of such system which is of major importance is of providing an immediate notification to the individual and their related people about either of the scenarios and hence prevents them.

Objectives: In recognition to the importance of safety and security of an individual , this project is tried to achieve the following objectives:

1. To build an excessive speed indication system and warning alert system via voice alert, remote accessing of speed by parents.
2. To provide an accident detection system and driver condition monitoring system using IOT Artificial Intelligence photos.
3. To provide location tracking using Google map plotting.
4. To provide information to parents and also helps in providing police complaint and sending messages to ambulance.
5. To prevent bike theft and provide vehicle stopping facility by owner.

Methodology:
The following gives the methodology provided for the above objectives as follows:

Methodology for Objective-1: Calculating the speed and GPS network to collect vehicle data. If the rider exceeds the speed limit, it provides voice alert and if the rider neglects the alert then parents will have the access to stop the vehicle through smart phones.

Methodology for Objective-2: Using accident detection sensor, camera present in smart phones will send and receive pictures.

Methodology for Objective-3: The GPS modem will continuously give the data i.e., the latitude and longitude indicating the position of the vehicle.

Methodology for Objective-4: Identifying the nearest hospitals and police stations is done by Map my India application and it sends the location details to parents through message or E-mail.

Methodology for Objective-5: Data from the accelerometer is evaluated with several threshold values and position data to determine a problem which helps in recognizing the bike theft and hence the owner can prevent it.

Scope for future work:

The project proposed certainly has some improvisations which can be implemented in future as some of the ideas proposed.

1. The hardware can be further more improvised using a alcohol sensor, where most of the accidents are occurring due to intoxication. This can be implemented by placing alcohol sensor as to detect the alcohol by giving certain limit value of the alcohol.
2. This project can also have eye blink sensor which prevents the individual who meets with an accident due to drowsiness. It can be overcome by placing eye blink sensor as required for the individual.
3. Can do graphical software development in order to track the vehicle.

2.2 PROACTIVE ACCIDENT AVOIDANCE SYSTEM USING IOT

Lots of Accidents are happening due to the Drivers mistake. The main causes of vehicle accident are related to Alcohol Consumption, Drowsiness and distracted vision. The aim of the proposed system is to help in analyzing these factors and develop accident avoidance systems. Here we Detect Driver Drowsiness by using a camera attached to the steering. The image of the driver's face captured by the camera is analyzed using Mat Lab tool and is alerted incase if the drowsiness is detected. Apart from that we also include Alcohol sensing and collision monitoring. Alcohol sensor is used to identify the drunk drivers and SMS is sent to the police in case of drunk & Drive. Ultrasonic sensor is used to measure distance in front of cars and incase of any risk of collision vehicle is stopped or slowed down.

The Internet of Things (IOT) is the interconnection of uniquely identifiable embedded computing devices within the existing Internet infrastructure. Typically, IOT offers advanced connectivity of devices, systems, and services that goes beyond machine-to-machine communications (M2M) and covers a variety of protocols, domains, and applications. The interconnection of these embedded devices (including smart objects), is implemented in nearly all fields of automation enabling advanced applications like a Smart Grid. The term —thingsll in the IOT refers to a wide variety of devices such as heart monitoring implants, biochip transponders on farm animals, electric clams in coastal waters, automobiles with built-in sensors, or field operation devices that assist fire-fighters in search and rescue. Current market examples include thermostat systems and washer/dryers that utilize Wi-Fi for remote monitoring. In this project we are presenting an internet based system entitled ‘Eye Blink and head movement Monitoring System’ which will help drivers to alert in drowsiness. This system is based on principle of monitoring eye movements of driver continuously using an IR sensor and head movement using accelerometer. If he/she falls asleep, then an alarm will ring to wake him/her up. Integration with the Internet implies that devices will utilize an IP address as a unique identifier. However, due to the limited address space of IPv4 (which allows for 4.3 billion unique addresses), objects in the IOT will have to use IPv6 to accommodate the extremely large address space required. Objects in the IOT will not only be devices with sensory capabilities, but also provide actuation capabilities (e.g., bulbs or locks controlled over the Internet). Largely, the future of the Internet of Things will not be possible without the support of IPv6; and consequently the global adoption of IPv6 in the coming years will be critical for the successful development of the IOT in the future.

2.3 AIMS & OBJECTIVES

This project prototyped is aimed to design & implement uniquely identifiable embedded computing devices within existing internet infrastructure for night vehicle drivers to locate and prevent road accident caused due to drowsiness. The objectives of proposed model are summarized below :

- I. Establish an eye blink & head movement monitoring sensor system for Drowsiness detection.
- II. In case of drowsiness detected a) Alert the driver via a wake call (vibration /Buzzer) b) Reduce speed and stabilize vehicle.
- III. Mediate the Sensor information and locate accident location using GPRS for help and rescue. III.Display the activities of designed system on LCD display.

PROBLEM STATEMENT The problem statement includes improving the quality of data acquisition about distraction-related crashes along with better analysis techniques. By analysing the understanding of the extent and nature of the distraction problem. The main aim is to reduce the driver workload associated with performing tasks using both built-in and portable in-vehicle devices via limiting the visual and manual demand associated with in-vehicle device interface designs. Better device interfaces and integrated wearable computers will help to minimize the amount of time and effort involved in a driver performing a task using the device. Minimizing the workload associated with performing non-driving, or —secondary, tasks with a device enables the driver to maximize the attention they focus toward the primary task of driving. Keep drivers safe through the introduction of crash avoidance technologies. These include the use of crash warning systems to re-focus the attention of distracted drivers as well as vehicle initiated (i.e., automatic) braking and steering to prevent or mitigate distracted driver crashes. Educate drivers about the risks and consequences of distracted driving are performed by targeted media messages, drafting and publishing sample text messaging laws.

2.4 AN IOT BASED ACCIDENT PREVENTATION & TRACKING SYSTEM FOR NIGHT DRIVERS

Fatal Road accidents can be easily avoided by understanding the psychological state of drivers. Majority of road accidents occur during night driving due to drowsiness state of vehicle drivers (Subject). This paper provides Eye Blink Monitoring System (EBM) that alerts the subject during state of drowsiness. An embedded system based on psychological state of Subject by monitoring eye movements and head movements are useful in warning drivers during initial sleep cycle phase of drowsiness. The physiological sleep state analysis of subject can be determined by monitoring subjects eye-blink rate using an IR sensor and head movement using an accelerometer. A normal eye blink rate has no effect on the output of the system. However, if subject is in extreme state of sleep-cycle, then IR sensor receives abnormal eye blinking rate & an alarm is initiated to wake the subject. An Internet of Things (IOT) enabled sensors are used to transmit the entire data collected by sensors over a smart grid network for quick response team to take actions under emergency conditions.

The Internet of Things (IOT) is the interconnection of uniquely identifiable embedded computing devices within the existing Internet infrastructure. Typically, IOT offers advanced connectivity of devices, systems, and services that goes beyond machine-to-machine communications (M2M) and covers a variety of protocols, domains, and applications. The interconnection of these embedded devices (including smart objects), is implemented in nearly all fields of automation enabling advanced applications like a Smart Grid. The term —thingsllin the IOT refers to a wide variety of devices such as heart monitoring implants, biochip transponders on farm animals, electric clams in coastal waters, automobiles with built-in sensors, or field operation devices that assist fire-fighters in search and rescue. Current market examples include thermostat systems and washer/dryers that utilize Wi-Fi for remote monitoring. In this project we are presenting an internet based system entitled ‘_Eye Blink and head movement Monitoring System’ which will help drivers to alert in drowsiness. This system is based on principle of monitoring eye movements of driver continuously using an IR sensor and head movement using accelerometer. If he/she falls asleep, then an alarm will ring to wake him/her up. Integration with the Internet implies that devices will utilize an IP address as

a unique identifier. However, due to the limited address space of IPv4 (which allows for 4.3 billion unique addresses), objects in the IOT will have to use IPv6 to accommodate the extremely large address space required. Objects in the IOT will not only be devices with sensory capabilities, but also provide actuation capabilities (e.g., bulbs or locks controlled over the Internet). Largely, the future of the Internet of Things will not be possible without the support of IPv6; and consequently the global adoption of IPv6 in the coming years will be critical for the successful development of the IOT in the future.

In this project we are implementing EBM (Eye Blink Monitoring Technique) to detect drowsiness of night drivers and preventing accidents. The other technologies that detect Drowsiness are EEG or Brain waves monitoring technique. Such a technique requires sophisticated system to map or monitor the brain of subject and determine the state of drowsiness based on the neurological sleep cycle. Though EEG technique is accurate to a larger extent, yet it is not cost effective and has a difficult implementation. On the other hand Eye Blink Monitoring Technique is dependent on physiological state of sleep of the subject and by understanding it, drowsiness can be detected and accident can be prevented. Drowsiness causing accident can be effectively prevented by designing an embedded system that is efficient enough to take critical decisions during emergency conditions. Majority of accident prevention systems come into picture when accident happens , however the proposed system is equipped with advantage of taking decisions by analyzing the symptoms of accident causing events. Brain wave technique only measures the drowsiness level but, EBM technique can be interfaced with a network of sensors in a cost effective manner to provide an efficient accident prevention system. The following key points were considered while estimating the feasibility and wide expansion of IOT based devices

Vehicle accidents are most common due to the imperceptibility of obstacles. Obstacles can strike the vehicle and causes severe damage. In order to reduce the number of crash and collision, 4 ultrasonic sensors are fixed on the four sides of the vehicle. These sensors detect the obstacles and gives notification through the LCD display and alarm sound. Temperature sensor is used to know the engine temperature. If the engine's temperature is above the predefined temperature, then it indicates through alarm and

cooling fan will be turned ON. Micro Electro Mechanical System(MEMS) sensor first calculate the X,Y,Z co ordinate of the vehicle, if there is any significant form of changes occurs, then the image of that location will be shared to the concern person and their family's smart phone. The shared location helps for the Rescue team and the police control room for the rescue operation. By this idea human lives can be saved and prevents the vehicle from damage.

2.5 SMART HELMET FOR ACCIDENT PREVENTION

- In a developing nation like India, with advancement in the transportation technology and rise in the total number of vehicles, road accidents increases rapidly. This advancement in technology also increased the traffic hazards. Two wheelers accounts for 25% of total road crash death. Hence the ratio of road accidents that take place frequently increases causing immense loss of life due to poor emergency facilities. This paper provides an intelligent system for two wheeler accident prevention and detection for human life safety. The prevention part involves, Smart Helmet, which automatically checks whether the person is wearing the helmet and has non- alcoholic breath while driving. The relay does not ON the engine if these two conditions are not satisfied. The microcontroller controls the function of relay and thus the ignition. The system also enables detection of an accident at any place and reports about the accident to predefined numbers with GSM module. The Microcontroller continuously records all the parameters of automobile for prevention and detection of accident

In less developed countries, road traffic accidents were the most significant cause of injuries, ranking eleventh among the most important causes of lost years of healthy life. In Indian road system, widening of the road is not an alternative solution to avoid traffic in such a cities. The problems with state drunk driving control systems can be solved in many ways. The most effective will follow several principles: They will invest authority and responsibility in people and organizations at all levels, local to national, because drunken driving control requires action at all levels. They will operate in the public eye, using the media to report on problems and solutions, because ultimate decisions on priorities and resources to control drunk driving must have public support. They will not promise instant solutions based on a single action but rather will take steady steps

towards long-term improvement. And they will establish mechanisms for identifying and solving problems rather than attempting to apply one-size fits-all methods. Hence Road Safety becomes a major issue of concern. Therefore it becomes necessary to implement such a technique which is not easy to bypass the basic rule of wearing helmet and to avoid drunken driving. Here we designed a system which checks the two conditions before turned ON the engine of the bike. Our system includes an alcohol sensor and a helmet sensing switch. A switch is used to detect whether the biker is wearing helmet. Alcohol sensor is used to detect the biker is drunk, the output is fed to the MCU. Both the switch and the alcohol sensor are fitted in the helmet. If any of the two conditions are violated the engine will not turned ON. Alcohol sensor MQ3 is used here for detecting the alcohol concentration present in the driver's breath. Sensor provides an analog resistive output based on the alcohol concentration. MCU is the microcontroller unit, which controls all the functions of other blocks in this system. MCU takes or read data from the sensors and controls all the functions of the whole system by manipulating these data. Alcohol sensor is connected to the MCU through an interfacing circuit and the helmet sensing switch is directly connected to the MCU. MCU receives data from these sensors and it gives a digital data corresponding to the output of sensors to the encoder only if the two conditions are satisfied.

Road accidents are increasing day by day because the riders are not using the helmet and due to consumption of alcohol. In today's world, huge numbers of people are dying on road accidents. By using smart helmet, the accidents can be detected. The main target of the project is designing a smart helmet for accident avoidance and alcohol detection. The IR sensor checks if the person is wearing the helmet or not. The Gas sensor recognizes the alcoholic substance in the rider's breath. If the person is not wearing the helmet and if he consumes alcohol, the bike will not start. If there is no sign of alcoholic substance present and helmet is used, then only the bike will start. At the point when the rider met with an accident, the sensor recognizes the condition of the motorbike and reports the accident. Then the GPS in the bike will send the location of the accident place to main server of the nearby hospitals. t. A smart helmet is a type of

protective headgear used by the rider which makes bike driving safer than before. The main purpose of this helmet is to provide safety for the rider. This can be implemented by using advanced features like alcohol detection, accident identification, location tracking, use as a hands free device, fall detection. 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 can be used as 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. In case of an accident it will send a message through GSM along with location with the help of GPS module. The distinctive utility of project is fall detection; if the rider falls down from the bike it sends a message.

2.6 SMART HELMET AND INTELLIGENT BIKE SYSTEM

The main objective of this paper is to build a safety system which is integrated with the smart helmet and intelligent bike to reduce the probability of two-wheeler accidents and drunk drive cases. The flex sensor checks if the person wearing the helmet or not. Alcohol sensors detect the alcoholic content in riders' breath. If the rider is not wearing the helmet or if there is any alcohol content found in rider's breath, the bike remains off. The bike will start until the rider wears the helmet and if there is no alcoholic content present. When the rider crashes, helmet hits the ground, sensors detect the motion and tilts of helmet and reports the occurrence of an accident. It sends information of the corresponding location to family members of the rider and emergency contact number

Index Terms: Biker's safety, Accident detection, Smart helmet, Alcohol detection.

A traffic accident is defined as any vehicle accident occurring on public highway roads .The thought of developing this project comes to do some good things towards the society. Two wheeler accidents are increasing day by day and lead to loss of many lives. The main aim of our project is to build a safety system which is integrated with the smart helmet and intelligent bike to reduce the probability of two-wheeler accidents. If any accident occurs no persons at place where to give information to the ambulance or parents. 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. Smart helmet focusing on three major applications which are helpful in our day to day life. At first and most one is the ignition of the bike will not on if we are not wearing the helmet. Secondly alcoholic driving is not possible by using this smart helmet. If the rider is alcoholic, the bike will not start. Third application is accident detection. If person met with an accident, no one is there to help him and simply leaving or ignoring the person, In such situation informing to ambulance or family members through mobile to rescue him for an extent. Various technologies are now available for bike rider safety. Wireless communication between bike to helmet and bike to traffic signal and speed breaker. The system will be comprised of a helmet module including stereo speakers and microphone, and a bike mounted base unit. The system will make use of different wireless communication protocols including ZigBee and another radio frequency protocols. when the rider or driver driving a bike he don't know where the speed breakers are there. By using RF technology they will find out where the speed breakers are there. Smart Helmet with Sensors for Accident Prevention , the microcontroller used in the system is Peripheral Interface Controller (PIC). Force Sensing Resistance (FSR) and the speed sensor are used as sensors to operate this system. Signal transmission between the two circuits is using a radio frequency concept. 315 MHz Radio Frequency Module is used since the range between the circuits is short. Drawback of this work as the motorcycles engine will only start is the helmet is worn and the belt has been buckled. A Solar Powered Smart Helmet With Multifeatures .In this helmet have multi features like Engine control system with the smart, in built Bluetooth system ,accident alert system, emergency alert switch (it gives the emergency message to police or family members) and cell phone charging with the solar power. Accidental Avoidance and Cabin Safety System for Automobiles .This system endures mainly with two modules namely Gas sensing module and Obstacle detection module these are interfaced with ATmega16 microcontroller. IR sensors transmit signal from its sensor head and again receive the signal reflected from an obstacle and instruct the microcontroller which alerts the driver with an alarm and controls the vehicle by stopping it. The gas sensor here is mounted inside the vehicle detects the level of the toxic gases it informs to the microcontroller which alerts the persons inside the vehicle with an alarm. Smart Helmet Using GSM and GPS

Technology for Accident Detection and Reporting System , vibration sensors are placed in different places of helmet where the probability of hitting is more which are connected to microcontroller board. So when the rider crashes and the helmet hit the ground, these sensors sense and then controller extract GPS data using the and when the data exceeds minimum stress limit then GSM module automatically sends message to ambulance or family members.

CHAPTER 3

SYSTEM DESIGN

EXISTING SYSTEM

In the existing system, when the accident is detected means, only the message will be send to the ambulance with the help of the gsm.Despite many efforts taken by different governmental and non-governmental organizations all around the world by various programs to aware against careless driving, yet accidents are taking place every now and then. However, many lives could have been saved if the emergency service could get the crash information in time. A study by Virtanen et al. shows that 4.6% of the fatalities in accidents could have been prevented only in Finland if the emergency services could be provided at the place of accident at the proper time In the existing system, the sensors are used such as IR sensor, load sensor, vibration sensor and gas sensor, mems. The gas sensor detects the measure of liquor consists in the breath of a person wearing the helmet. The Alcohol recognition sensors connected with the helmet in distinguish the Alcohol detection. MEMS based handle bar control of the vehicle. The Vibration sensor is used to detect any accident. Load checking to recognize the load of the vehicle and alongside the sensor to locate the quantity of individuals travelling in the bike.

PROBLEM STATEMENT

- Hard to implementation
- It is not cost effective
- We can't get able update of the driver status.
- Data transmission speed is very less compared to IOT technology
- Cloud updates are not possible

3.1 ARDUINO NANO AND ITS PROGRAMMING

Arduino is a tool for making computers that can sense and control more of the physical world than your desktop computer. It's an open-source physical computing platform based on a simple microcontroller board, and a development environment for writing software for the board.

Arduino can be used to develop interactive objects, taking inputs from a variety of switches or sensors, and controlling a variety of lights, motors, and other physical outputs. Arduino projects can be stand-alone, or they can be communicate with software running on your computer. The boards can be assembled by hand or purchased preassembled; the open-source IDE can be downloaded for free.

The Arduino programming language is an implementation of Wiring, a similar physical computing platform, which is based on the Processing multimedia programming environment.

Arduino nano:

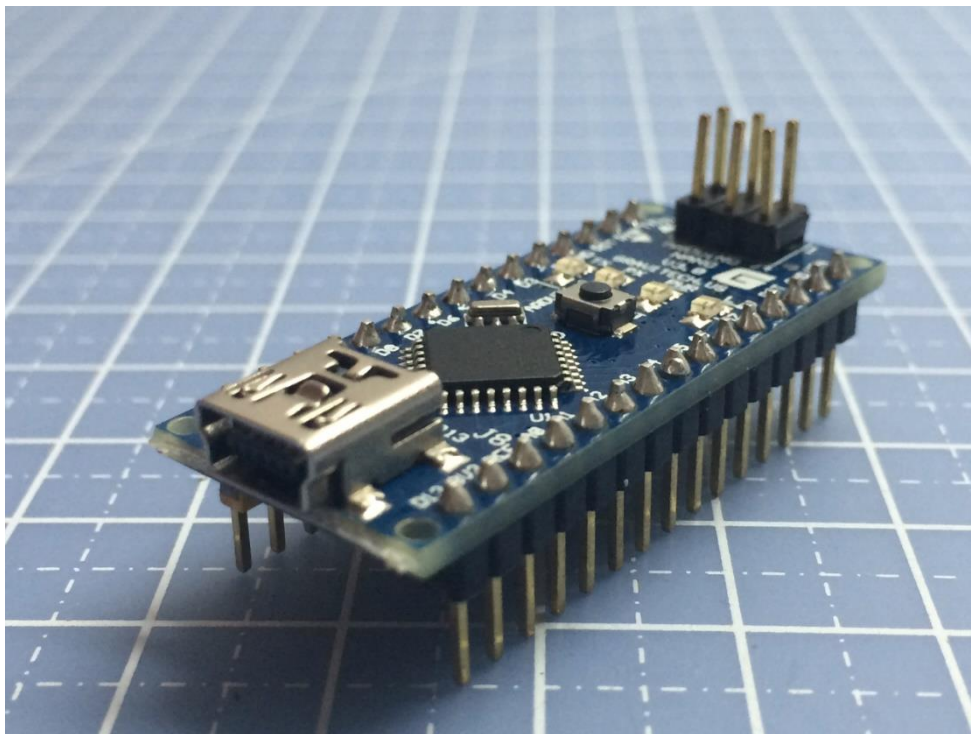


Fig 3.1 ARDUINO NANO

CHAPTER 4

PROPOSED SYSTEM:

- The core element of the model is the arduino board which controls and manages all the functions performed by the other components of the model. The location of the vehicle will be transferred to the cloud page to monitor.
- MEMS Sensor will detect the tilt and record the values based on co-ordinate system and sends the signal to the arduino board. The Gas sensor MQ3 has high sensitivity to alcohol and sends signal to stop the vehicle. This module provides both digital and analog output.
- Heart beat and vibration sensor comes into picture when the rider feels any heart problem and accident detected. buzzer is used to alert the sound when any problem to the driver.
- SOS message can be sent when rider meets with an accident. This is achieved using android app, sensors, Wifi and Cloud. Cloud send the data to the concerned person through Wifi. The android app analyzes data and performs specific actions.
- The IOT Technology is used to transmit the sensor data to the webpage by vehicles with the ultra speed. then these data are uploaded to the IOT Cloud with the help of Node MCU.
- To avoid the theft of the vehicle, we placed vibration sensor to alert. The motor is attached to the Arduino board to stop and start of the vehicles
- The live monitoring of the driver and vehicle status is possible with this project. Then alert will go on to the gmail and sms based alert system.

ADVANTAGES

- A safe 4 wheeler journey is possible which would decrease the head injuries throughout accidents caused from the absence of helmet .
- The driver health parameters are continuously monitored
- The alert message is getting updated to the important persons.
- Additionally reduce the accident rate due to drunken driving.
- The Transmission speed of the data is very high.

PROJECT EXPLANATION

- The Collision preventive system is engaged whenever the vehicle is turned ON. The ultrasonic sensor fixed in the vehicle is used to detect the obstacle in front of the vehicle. The ultrasonic sensor is also used to calculate the distance between the obstacle and the vehicle.
- The distance between the vehicle and the obstacle would be preset. If the obstacle is recognized at the 90 cms then the alarm will go on. The alert system goes on at the decrease of every 15 cms.
- This project focuses on building a user-friendly device that specializes in detecting intrusions besides doing close range obstacle detection.
- Automobile safety can be improved by anticipating a crash before it occurs and thereby providing additional time to deploy safety technologies.
- Warnings can be like buzzer if the driver is approaching a pothole or any obstruction, driver may be warned in advanced regarding what the road entails.
- The project's ultimate aim thus finalized as, one to build a general, easy-to-use and versatile system that can prevent fatal accidents.

SENSOR MODULE

All the sensors are connected to the Arduino microcontroller to monitor the driver status, vehicle theft and accident systems.

ALERT SYSTEM

The SMS and mail alert is possible with this project. Through the alert system we can save the vehicle and driver.

IOT MODULE

The live monitoring is possible with IOT systems.

BLOCK DIAGRAM:

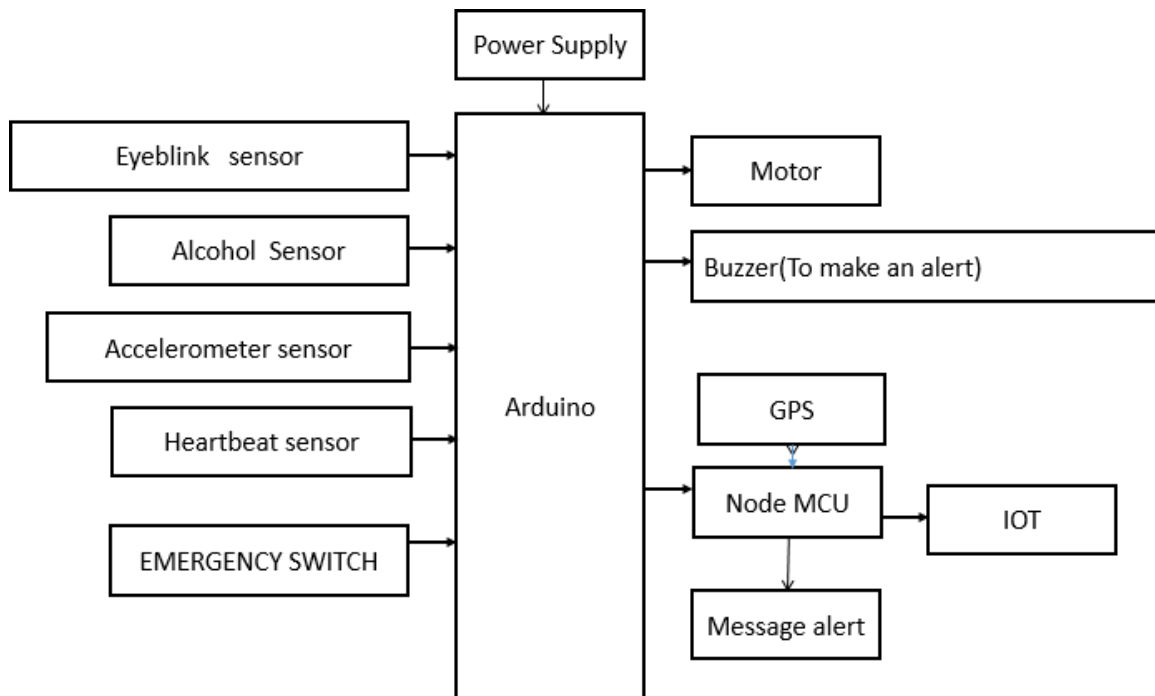
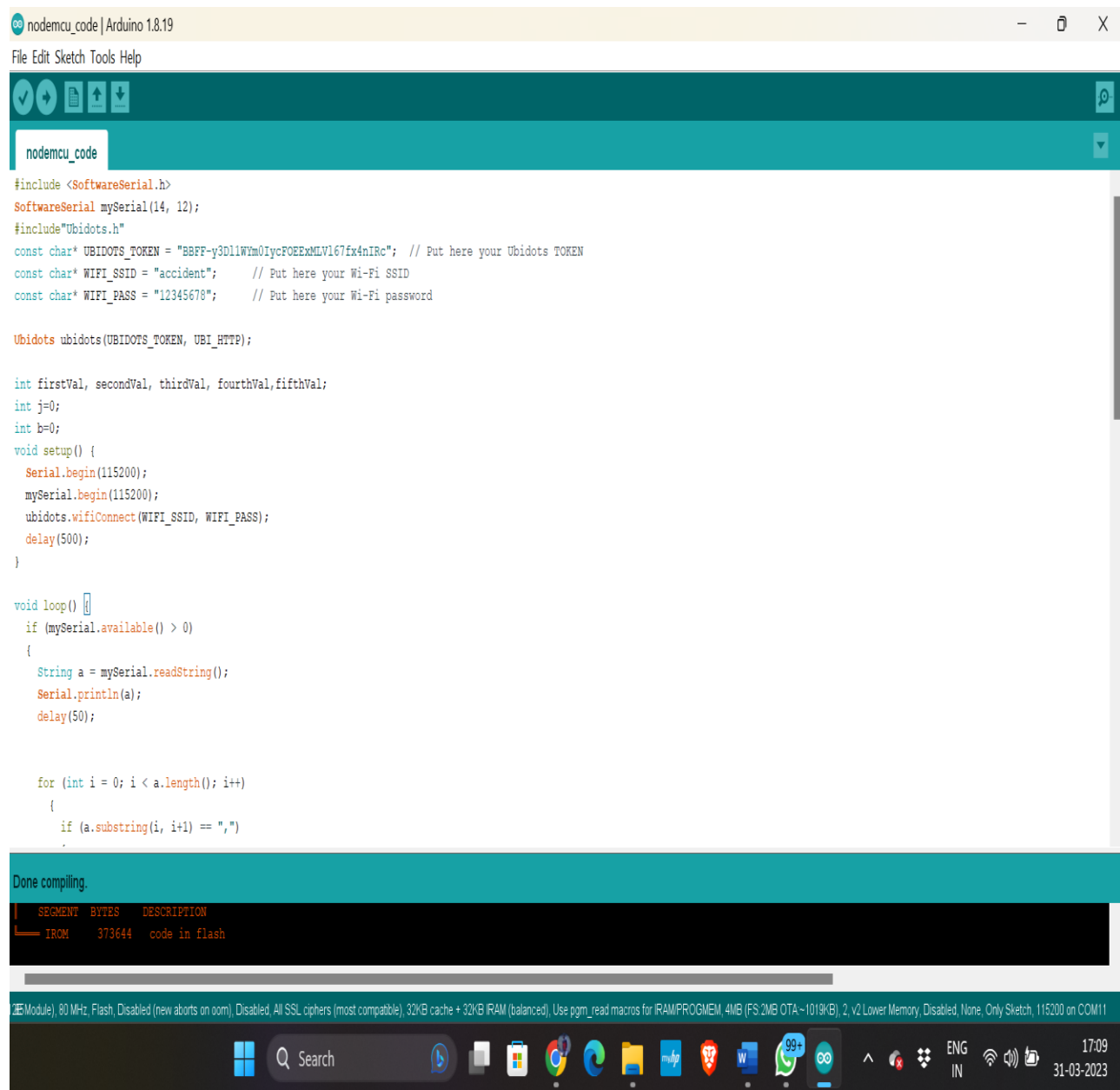


FIG.4.1 BLOCK DIAGRAM OF SAFETY AND SECURITY SYSTEM

4.4 NODEMCU CODE:



```
nodemcu_code | Arduino 1.8.19
File Edit Sketch Tools Help

nodemcu_code

#include <SoftwareSerial.h>
SoftwareSerial mySerial(14, 12);
#include "Ubidots.h"
const char* UBIDOTS_TOKEN = "BBFF-y3Dl1WYm0IycFOEXMLVl67fx4nIRc"; // Put here your Ubidots TOKEN
const char* WIFI_SSID = "accident"; // Put here your Wi-Fi SSID
const char* WIFI_PASS = "12345678"; // Put here your Wi-Fi password

Ubidots ubidots(UBIDOTS_TOKEN, UBI_HTTP);

int firstVal, secondVal, thirdVal, fourthVal, fifthVal;
int j=0;
int b=0;

void setup() {
  Serial.begin(115200);
  mySerial.begin(115200);
  ubidots.wifiConnect(WIFI_SSID, WIFI_PASS);
  delay(500);
}

void loop() {
  if (mySerial.available() > 0)
  {
    String a = mySerial.readString();
    Serial.println(a);
    delay(50);

    for (int i = 0; i < a.length(); i++)
    {
      if (a.substring(i, i+1) == ",")
      {
        // ...
      }
    }
  }
}
```

Done compiling.

SEGMENT	BYTES	DESCRIPTION
IRCM	373644	code in flash

ESP8266 Module, 80 MHz, Flash, Disabled (new aborts on oom), Disabled, All SSL ciphers (most compatible), 32kB cache + 32kB IRAM (balanced), Use pgm_read macros for IRAMPROMEM, 4MB (FS 2MB OTA ~1019KB), 2 v2 Lower Memory, Disabled, None, Only Sketch, 115200 on COM11

17:09 31-03-2023

FIG:4.1

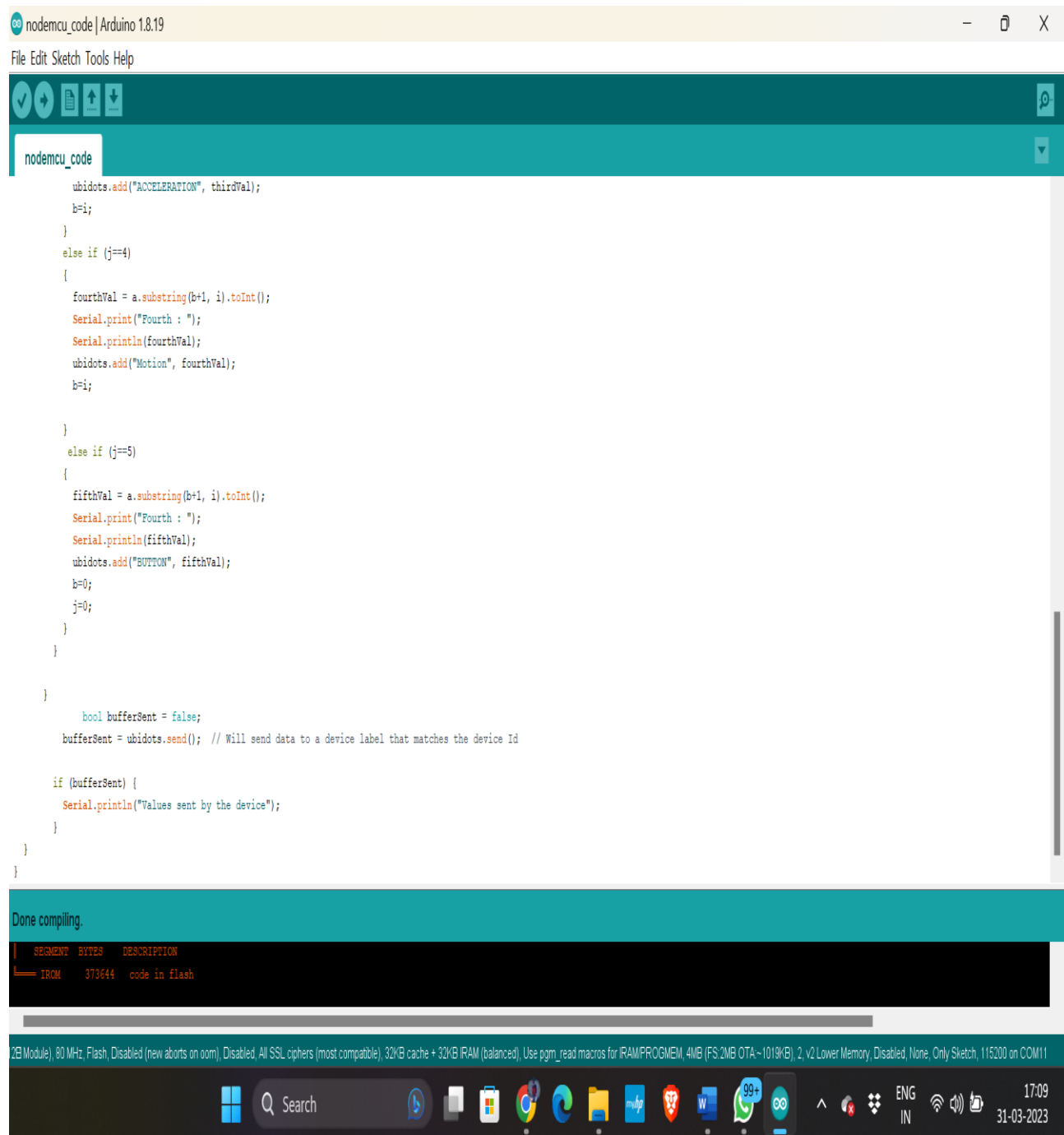


FIG:4.2

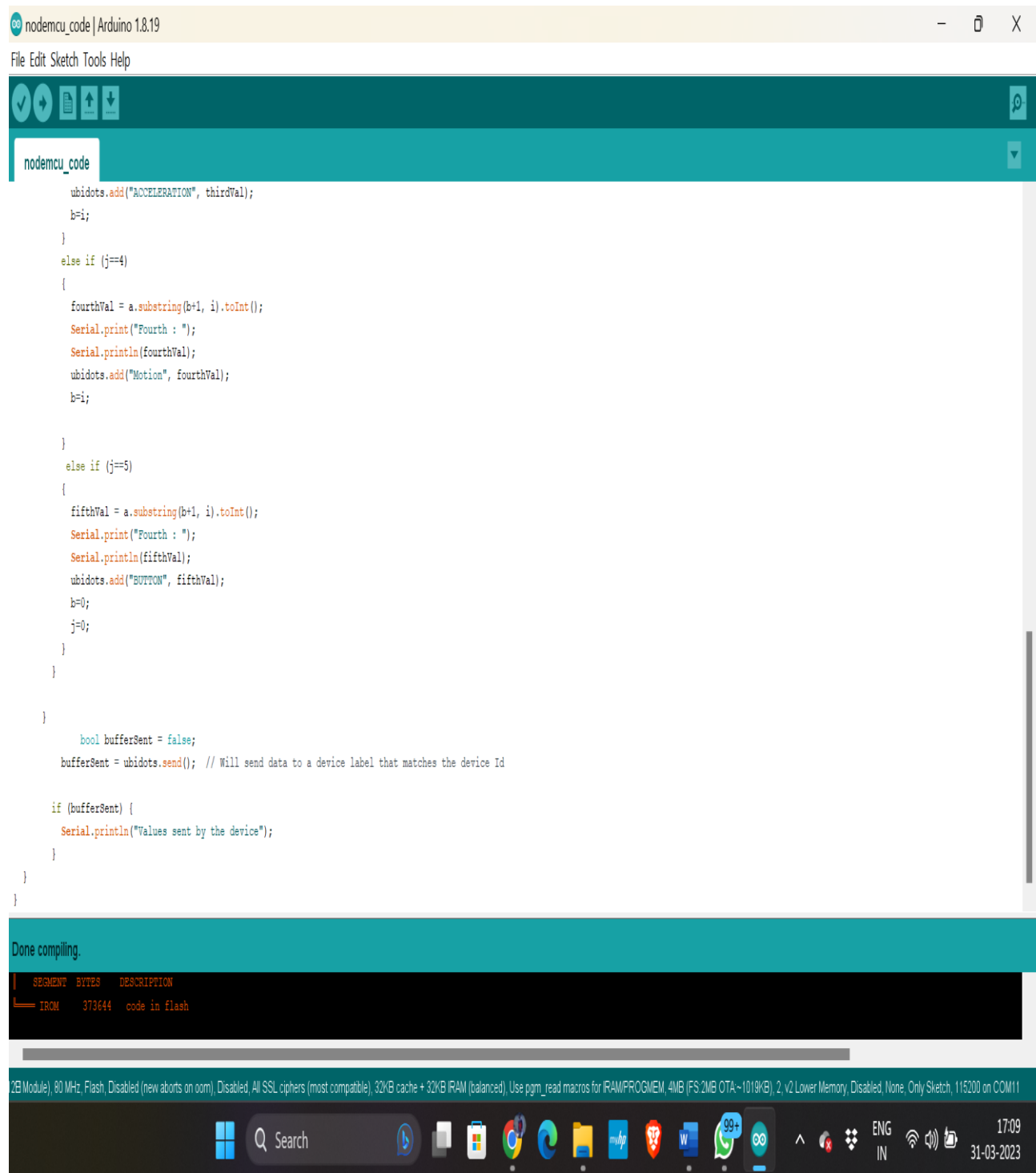
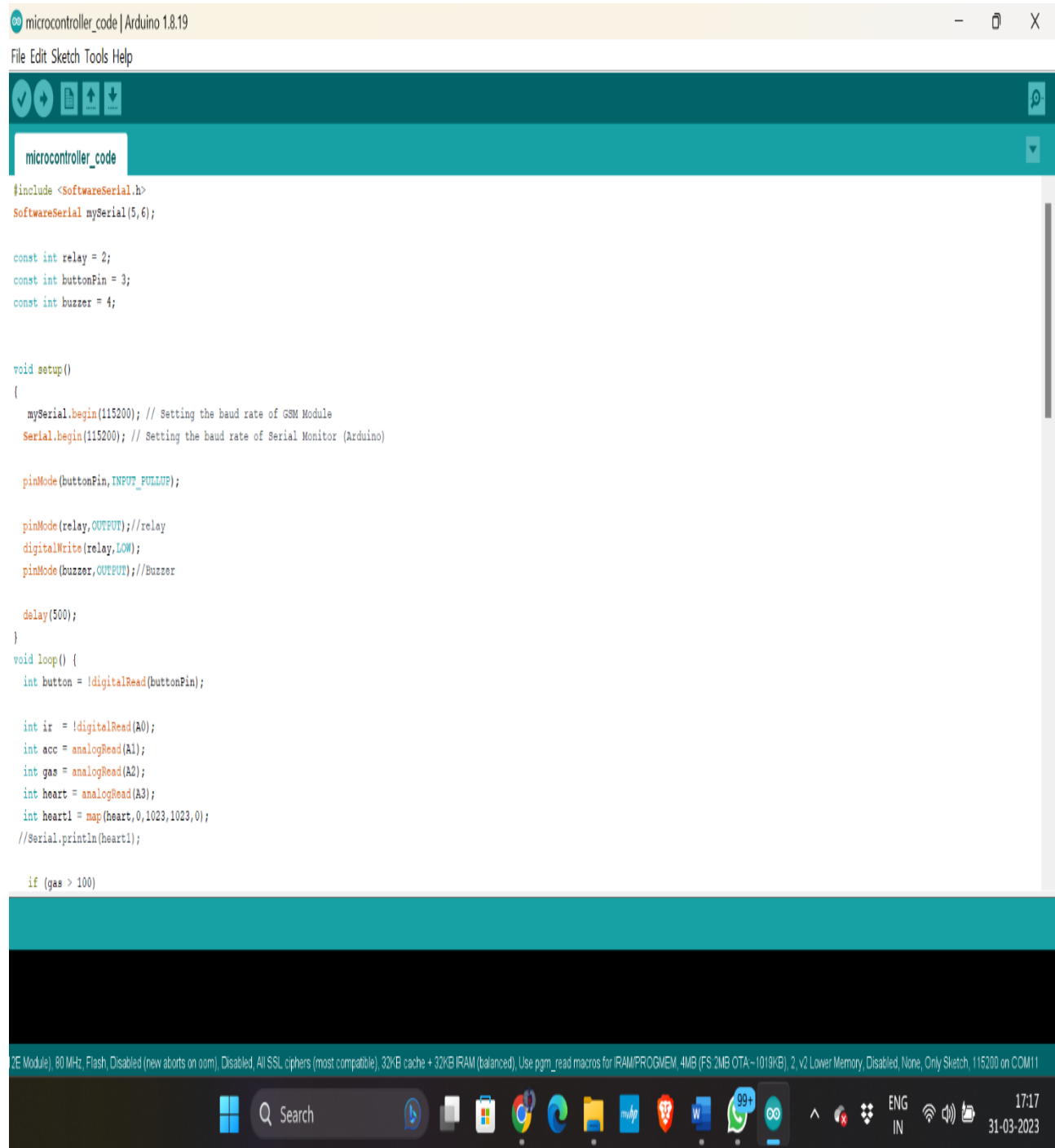


FIG:4.3

MICROCONTROLLER CODE :



The screenshot displays the Arduino IDE interface. The title bar shows 'microcontroller_code | Arduino 1.8.19'. The menu bar includes 'File', 'Edit', 'Sketch', 'Tools', and 'Help'. The toolbar contains icons for opening, saving, and uploading. The code editor shows the following code:

```
#include <SoftwareSerial.h>
SoftwareSerial mySerial(5,6);

const int relay = 2;
const int buttonPin = 3;
const int buzzer = 4;

void setup()
{
  mySerial.begin(115200); // Setting the baud rate of GSM Module
  Serial.begin(115200); // Setting the baud rate of Serial Monitor (Arduino)

  pinMode(buttonPin, INPUT_PULLUP);

  pinMode(relay, OUTPUT); // relay
  digitalWrite(relay, LOW);
  pinMode(buzzer, OUTPUT); // Buzzer

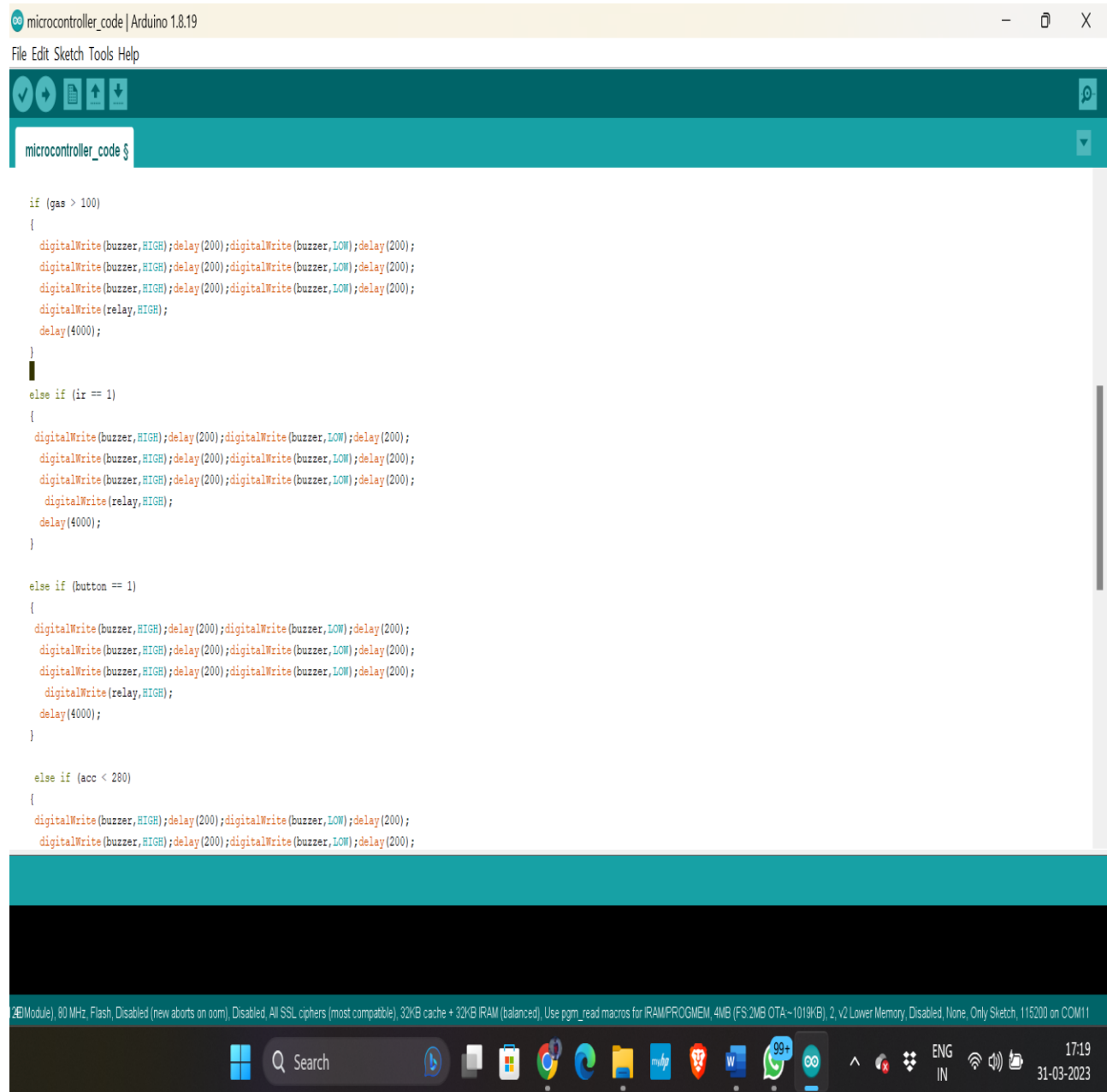
  delay(500);
}

void loop() {
  int button = !digitalRead(buttonPin);

  int ir = !digitalRead(A0);
  int acc = analogRead(A1);
  int gas = analogRead(A2);
  int heart = analogRead(A3);
  int heart1 = map(heart, 0, 1023, 1023, 0);
  //Serial.println(heart1);

  if (gas > 100)
```

At the bottom of the IDE, a status bar displays hardware and software details: 'ZE Module, 80 MHz, Flash, Disabled (new aborts on oom), Disabled, All SSL ciphers (most compatible), 32kB cache + 32kB IRAM (balanced), Use pgm_read macros for IRAM/PROGMEM, 4MB (FS 2MB OTA ~ 1019kB), 2 V2 Lower Memory, Disabled, None, Only Sketch, 115200 on COM11'. The Windows taskbar at the bottom shows the Start button, a search bar, and various application icons. The system clock indicates 17:17 on 31-03-2023.





microcontroller_code \$

```
    else if (acc < 280)
    {
        digitalWrite(buzzer,HIGH);delay(200);digitalWrite(buzzer,LOW);delay(200);
        digitalWrite(buzzer,HIGH);delay(200);digitalWrite(buzzer,LOW);delay(200);
        digitalWrite(buzzer,HIGH);delay(200);digitalWrite(buzzer,LOW);delay(200);
        digitalWrite(relay,HIGH);
        delay(4000);
    }
    if (heart1 < 883)
    {
        int heart2 = random(72,82);
        digitalWrite(buzzer,HIGH);delay(200);digitalWrite(buzzer,LOW);delay(200);
        digitalWrite(buzzer,HIGH);delay(200);digitalWrite(buzzer,LOW);delay(200);
        digitalWrite(buzzer,HIGH);delay(200);digitalWrite(buzzer,LOW);delay(200);
        digitalWrite(relay,HIGH);
        delay(4000);
        Serial.print(heart2);Serial.print(",");
        mySerial.print(heart2);mySerial.print(",");
    }
    else{
        Serial.print("0");Serial.print(",");
        mySerial.print("0");mySerial.print(",");
        digitalWrite(relay,LOW);
    }

    digitalWrite(relay,LOW);

    Serial.print(gas);Serial.print(",");
    Serial.print(acc);Serial.print(",");
    Serial.print(ir);Serial.print(",");
    Serial.print(button);Serial.println(",");
```

28M Module, 80 MHz, Flash, Disabled (new aborts on oom), Disabled, All SSL ciphers (most compatible), 32kB cache + 32kB IRAM (balanced), Use pgm_read macros for IRAMPROMGMEM, 4MB (FS:2MB OTA~1019kB), 2, v2 Lower Memory, Disabled, None, Only Sketch, 115200 on COM11

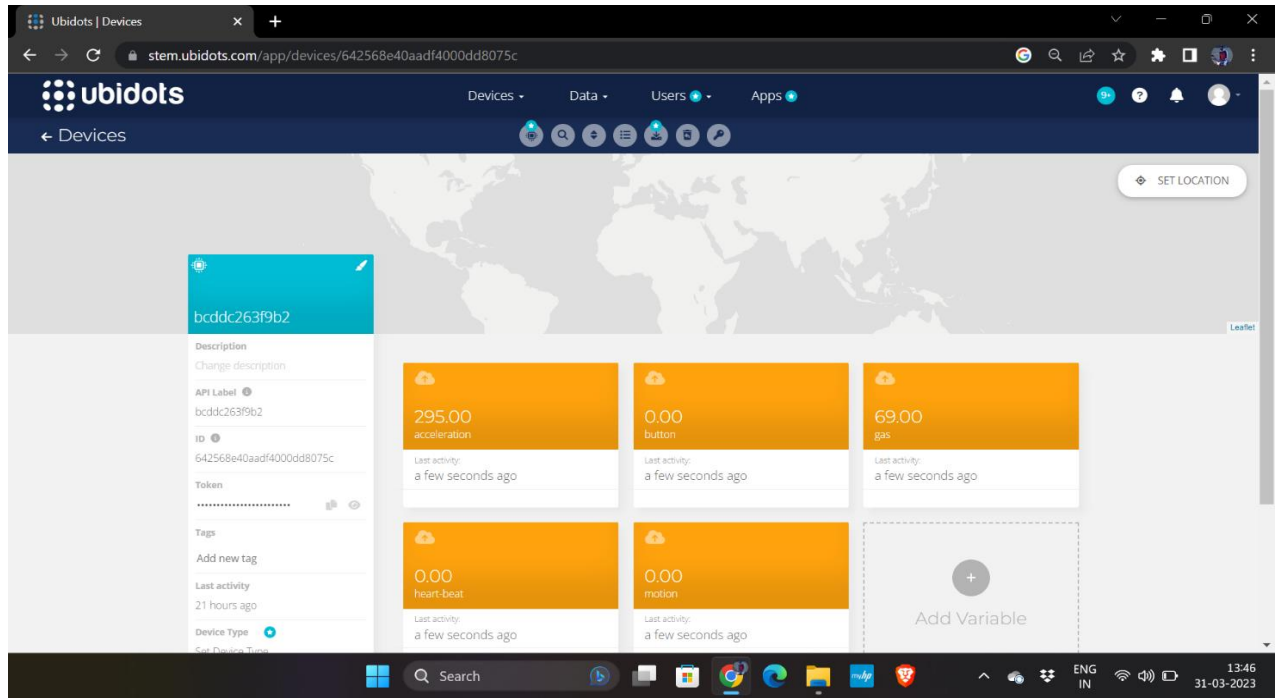


Search





OUTPUT :



REFERENCES:

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1,2,3,4MIT College of Engineering, ENTC Department, Pune
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