VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JNANA SANGAMA" Belagavi-560081, Karnataka

A Project Report On

"IOT BASED GROGGY DRIVING ALERTING AND AN TRAFFIC COLLISION INFORMATION SYSTEM"

Submitted in partial fulfilment of the requirements for the award of degree
Of

MASTER OF TECHNOLOGY
In
COMPUTER SCIENCE AND ENGINEERING
(CBCS Scheme)

By

RAKSHITHA K.S

USN: 1BY17SCS09

Under the guidance of

Mrs. Radhika KR
Asst. Professor
Department of CSE
BMSIT&M

DEPARTMENT OF COMPUTER SCIENCE&ENGINEERING
BMSINSTITUTEOFTECHNOLOGY&MANAGEMENT
Avalahalli, Yelahanka, Bengaluru-560064

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT

Avalahalli, Yelahanka, Bengaluru-560064

CERTIFICATE

This is to certify that the project work entitled **"IOT BASED GROGGY DRIVING ALERTING AND AN TRAFFIC COLLISION INFORMATION SYSTEM"** has been carried out by **RAKSHITHA K.S**, USN: **1BY17SCS09**, a bonafide student of **BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT, Bengaluru** in partial fulfilment for the award of **MASTER OF TECHNOLOGY** in **COMPUTER SCIENCE AND ENGINEERING (CBCS SCHEME)** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the academic year 2018-19. It is certified that all corrections/suggestions indicated for assessment have been incorporated in the report deposited in the departmental library. The project work report has been approved as it satisfies the academic requirement in respect of project work prescribed for the said degree.

Radhika 14.6.19		PRINCIPAL BMS Institute of Technology & Mgmt. Avalahalli, Yelahanka, B'luru-64.
Mrs. Radhika K R	**Dr. Anil G N**	**Dr. Mohan Babu G N**
Asst. Professor	Professor and Head	Principal
Department of CSE	Department of CSE	BMSIT&M
BMSIT&M	BMSIT&M	Bengaluru-64
Bengaluru-64	Bengaluru-64	

Name of Examiners	**Signature with Date**
1. _____	_____
2. _____	_____

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

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BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT

Avalahalli, Yelahanka, Bengaluru-560064

DECLARATION

I, **RAKSHITHA K.S**, student of fourth semester M. Tech, in the Department of Computer Science and Engineering, BMS Institute of Technology & Management, Bengaluru declare that the project work entitled **"IOT Based Groggy Driving Alerting And An Traffic Collision Information System"** has been carried out by me and submitted in partial fulfilment of the course requirements for the award of degree in **Master of Technology (CBCS Scheme)** in **Computer Science and Engineering** of **Visvesvaraya Technological University, Belagavi** during the academic year 2018-19. The matter embodied in this report has not been submitted to any other university or institution for the award of any degree or diploma.

14/06/2019
Date of Submission

Rakshitha k.s
Signature of the Student

Student Name: RAKSHITHA K.S

USN: 1BY17SCS09

Department of Computer Science and Engineering

BMS Institute of Technology & Management

Bengaluru-560 064

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First and foremost, I would like to thank **Dr. Mohan Babu G N.**, Principal, BMSIT&M, Bengaluru, for his moral support towards completing my project work.

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RAKSHITHA K.S

(1BY17SCS09)

ABSTRACT

This venture is centred around tired driver identification and the target of this task is to perceive driver's state with elite. Tired driving is one of the fundamental reasons of auto collisions in which numerous individuals bite the dust or get harmed. Moreover, strategies concentrating on driver's state are isolated into two gatherings: techniques utilizing physiological signs and strategies utilizing PC vision. In this proposition, driver information are video portions caught by a camera and the technique proposed has a place with the gathering that utilizes PC vision to recognize driver's state.

There are two essential states of a driver, those are sharpness and tired states. Video parts got are researched by using picture getting ready procedures. Fovea Centralis are recognized and those eye zones are commitment to right and left eye area classifiers, which are completed using counterfeit neural frameworks. The neural frameworks bunch the benefit and left eye as open, semi-shut or shut eye. The eye states along the bit fragment are merged and the driver's state is foreseen as aware or lethargic.

CHAPTER 1

INTRODUCTION

1.1 Introduction on Image Processing

Image Processing is a technique to change over a picture into computerized structure and play out certain activities on it, so as to get an upgraded picture or to extricate some valuable data from it. It is a sort of flag regulation in which input is picture, similar to video edge or photo and yield might be picture or qualities related with that picture.

Picture preparing fundamentally unites the running with three stages.

- Signifying the picture with optical scanner or by modernized photography.
- Analyzing and controlling the picture which unites information weight and picture upgrade and spotting structures that are not to human eyes like satellite photos.
- Out-turn is the End stage in which result can be changed artwork or report that depends upon picture examination.

Purpose of Image Processing:

1. Enactment - Observe the items that are not unmistakable.
2. Picture honing and rebuilding - To make a supercilious picture.
3. Picture recovery - Seek for the picture of intrigue.
4. Estimation of the example – Measures the different types dimensions in a Image.
5. Image Identification – Distinguish the articles in a picture.

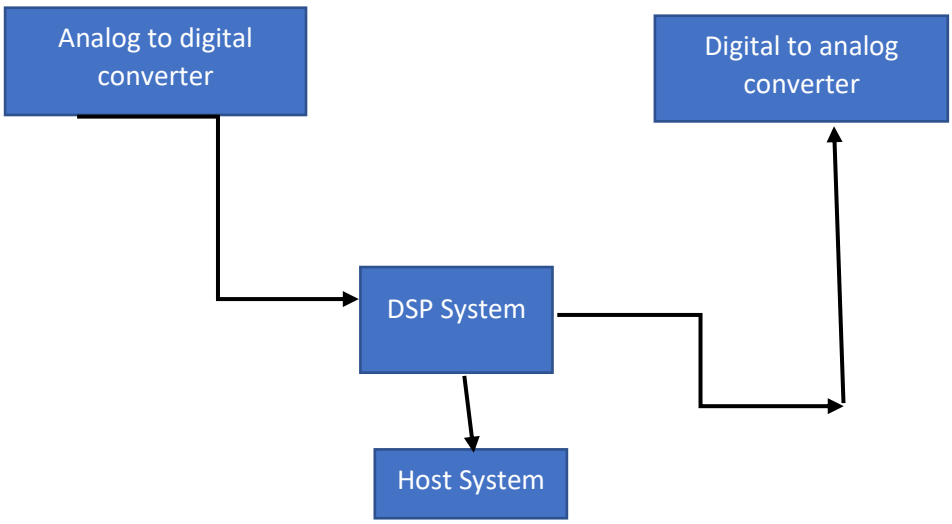

Figure 1.1: Working of Image Processing

Simple to automated converter: Analog to Digitalized Converter ADC it is a gadget that changes over clear banners in to front line signals. Analog Information is transmitted by coordinating a tireless transmission development by uplifting sign quality.

Advanced to the Analog converter: DAC is a framework that changes over computerized motion into a simple flag.

DSP System: Digitalized Signal Processing which includes direct or nonlinear tasks. Nonlinear flag preparing is firmly identified with nonlinear Structure identification can be executed in the time, deterioration, and spatial-transient spaces.

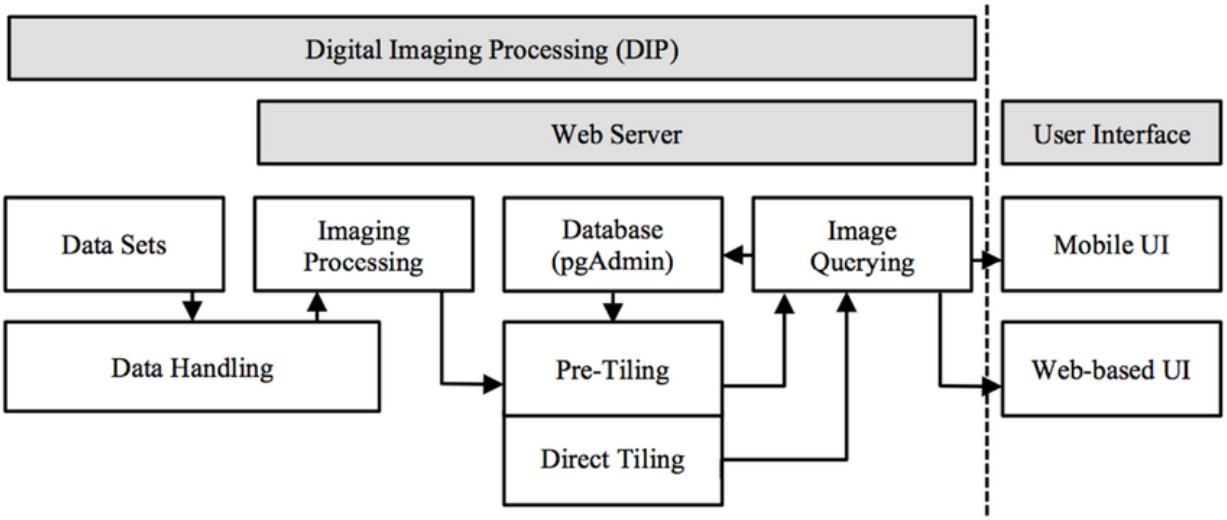

Figure 1.2: Architecture of image processing

Web Server: A web server will be server programming, or equipment devoted to running said programming, that can fulfil World Wide Web customer demands. A web server can contain at least one sites. A web server forms approaching system demands over HTTP and a few other related conventions.

User Interface: The craving for the UI of an online picture preparing programming is to look like the UI of a local broadly useful picture altering programming.

Information Handling: It permits a more extensive range of computations to be linked to the data and can dodge issues. Since some pictures are usually characterized more than two Quantification (maybe progressively) move forward picture handling might be demonstrated as multidimensional frameworks.

Applications of Image Processing:

1.Moving article following : This appeal accredit to gauge fluctuation frameworks and obtain optical data of the moving item. The diverse kind of ways to deal with track an article are:

- Movement build backing
- Remembrance build patronage

2. Protection Examination : Aeriform observation plans are deployed to consistently watch out for the dry land and ocean. This Plea is likewise used to find the sorts and disposition of maritime vessels of the marine surface. The imperative obligation is to partition the different articles present in the water area, some portion of the picture.

The Multiple guidelines, for example, Extent(span), expansiveness, territory, fringe, smallness are set up to group of every one of isolated items. It is fault-finding to divine the dissemination of these articles in various ways that are east, west, north, south, upper east, north-west, south-east and south west to clarify each conceivable development of the vessels. We can translate the whole naval spot from the spatial dissemination of these articles.

3. Biomedicine Imaging methods – For restorative conclusion, distinctive categories of imaging apparatuses, for example, X-glowing, Ultrasonography, PC assist fluoroscopy (CT) and so on are took advantages. The grids of X-beam, MRI, and PC supported nuclear medicine (CT) are given beneath.

1.2 Introduction on IOT.

IoT needs to connect all possible objects to relate each other on the internet to offer secure ,relief life for human. Web of Things (IoT) makes our reality as conceivable as connected together. At present we totally have web foundation wherever and we can utilize it inevitably. Embedded computing devices would be showing to internet impact. Mutual samples for embedded computing devices are MP3 players, GPS etc.

IoT attempt to create progressive connectivity among these above device or services in directive to little by little doing automation in all parts. Imagine that all thing is associated to gather, and all info would be interacted to each other over typical and dissimilar procedure area and applications.

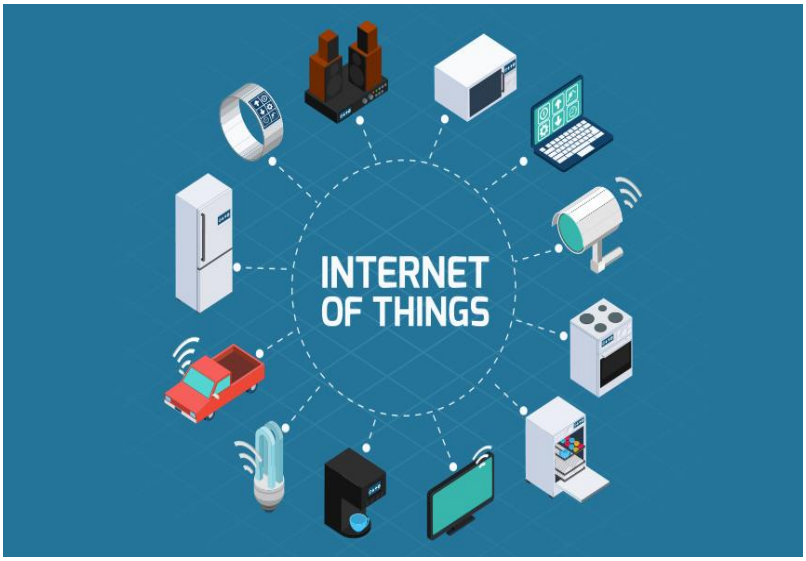

Figure 1.3: IOT System

APPLICATIONS OF IOT

1)**Individual Home Automation System:** Home Automation framework is the real model around there.

2) **Enterprise:** In the venture region numerous applications are there Like natural checking framework, keen condition and so forth.

3) **Home Smart Thermostat:** It is associated with the web. The Nest adapts naturally your family's schedules and will consequently change the temperature dependent on your exercises, to make your home increasingly productive. There is likewise a portable application which enables the client to alter temperature and timetables.

4) **Medicinal and Health Care:** Remote wellbeing observing and crisis notice framework are instances of IOT in the therapeutic field.

5) **Transportation:** Electronic toll gathering framework is the most helpful precedent here.

6) **Large scale arrangement:** There are different huge undertakings continuous on the planet. Songdo (South Korea), the first of its benevolent completely wired Smart City, is close fruition. Everything in this city is intended to be wired, associated and transformed into an information stream that would be checked by a variety of PCs with no human communication.

1.3 Introduction on driver drowsiness:

Nowadays due to less complicated Equated Monthly Instalments (EMI) options humans are capable of order vehicles, bikes hence adding to the track every day. Balanced creators have embraced diverse advertising stratagem. This now not only provides to the track however additionally enlarges the hazard of deaths because of misfortune and automobile bump.

Chauffeur exhaustion awareness technologies can lessen the danger of a tragic coincidence via caution the riding pressure of his/her fatigue. The improvement of era for preventing fatigue is a super mission. To save you drowsiness of driver during the use of calls for a technique for appropriately identifying a tumble in driving force wariness. Doze which can be quick compare hypersomnia lasting 2 to four seconds are exceptional indicator of drudgery. Thus, via continuously searching at the eyes and mouth motion of the reason pressure it can stumble on the drowsy kingdom of reason pressure early sufficient to keep away from accident.

Figure 1.4: Driver under drowsy

IoT will be capable of enforce perfectly and regular with a big quantity of various and heterogeneous structures. Building a generalized structure for the IoT is the complex venture because IoT has an exceptionally large type of devices, hyperlink layer technologies, and offerings that may be worried in this type of device.

1.4 Organization of the Project Report

Chapter 1: Preamble

Chapter 1: illustrates the foundation of the project, domain which presents the overview of driver drowsy detection, algorithms used to alert the driver.

Chapter 2: Literature Survey

Chapter 2 covers the literature survey of the project, it includes methodologies and algorithms implemented in the existing systems.

Chapter 3: System Analysis

It describes the motivation for taking up of this project, current system, limitations of real system, proposed system and its superiority.

Chapter 4: System Requirements

It describes the software, hardware and unserviceable requirements of this project.

Chapter 5: High Level System Design

Software development lifecycle, system architecture, process flow, data flow diagrams, and UML diagrams of the proposed system are discussed in this chapter.

Chapter 6: Implementation

This chapter provides the detailed description of the algorithms implemented in the proposed system.

Chapter 7: Software Testing

It describes the testing processes undergone by the complete project starting from unit testing to integrated testing.

Chapter 8: Experimental Results and Discussions

It illustrates the results and outcomes of the operations carried out with the experimental setup of this project.

Future work and Conclusion

This project concludes with demonstrations and limitations of the work carried out and the scope for future work.

CHAPTER 2

LITERATURE SURVEY

2.1 RELATED WORK

The viewable prompts utilized portray eyelid development, head development, and outward appearance. A probabilistic model is created to show human exhaustion and to anticipate weakness dependent on the viewable prompts got. The concurrent utilization of numerous viewable prompts and their methodical mix yields a significantly more strong and precise weariness portrayal than utilizing a solitary obvious prompt. This framework was approved under genuine weariness qualified with human subjects of various occasion ethnic foundations, sexual orientations, and ages, with/without glasses, and under various enlightenment shapes. It was observed to be sensibly strong, dependable, and precise in weakness portrayal.

System is competent of discerning the situation of eyes with or without the well-organized spectacles. Matlab with Digitalized image processing gadget has been used to produce the image provided by an astrograph. Matlab makes the System Objects utilizing Viola Jones calculation to identify the items, for example, nose, mouth etc.. After capturing an images, non-square rectangular eyes area was adjusted to minimize the clamour. RGB to gravy scale and manually to Bi-level transfiguration is a suitable threshold value. A halfway alter was used to minimize the noise and then the image was burnished. The system implemented in such a way that it runs 8-15 frames per second.

Title: Lazy Driver discernment Through the Facial Movement Analysis.

Author: Esra Vural

Description: Tired driver location framework is one of the potential uses of keen vehicle frameworks. Past ways to deal with tiredness recognition basically make pre-suspicions about the applicable conduct, concentrating on squint rate, eye conclusion, and yawning. Here we utilize AI to data mine genuine human conduct amid languor scenes. Programmed classifiers for 30 facial activities from the Facial Action Coding framework were created utilizing AI on a different database of unconstrained articulations. These facial activities incorporate squinting and yawn movements, just as various other facial developments.

Title : An Real Time Online Prototype driver-weakness screen.

Author: Qiang Ji

Description: It utilizes Remotely Located charge-coupled-gadget cameras furnished with positive electromagnetic illuminators to gain video pictures of the motorist. Different Visual prompts that normally portray the dimension of readiness of an individual are removed progressively and methodically joined to construe the exhaustion dimension of the driver. The Optical signals utilization describes eyelid movement ,head development, and outward appearances.

Title: Driver Drowsy Warning Systems Using Image Processing

Author: Singh Himani Paramr , MehulJajal

Description: Driver Drowsiness recognition reckoning contingent on the condition of eyes of the motorist which is dictated by his iris perceivability has been executed. On the off chance that eyes stay in one state whichever unlocked or near longer than predicted time just as if the driver isn't looking linear front , it means that driver is unenergetic and afterward the framework watchfulness the driver.

Title: Driven Automated Object Perception for Urban Survelliance System in elegant Cities.

Author: Alvaro Gonzalez, M.Bergasa

Description: Driver sleepy alarming System is a automobile wellbeing groundwork which will anticipate mishaps that are brought about by autoist getting stagnant. This paper intends to utilizes the conduct of the driver, including an eye wind-up and bean stance. They are observed by a photochronograph and the driver is cautioned if any of these indolence indications are identified. These are significant issues that must be managed or the reconnaissance We portray the upgrades we acquainted with the first calculations detailed in the writing in light of certain issues that emerged amid field testing. We likewise give broad exploratory outcomes that feature the solid focuses and a few shortcomings of the model system. Technology will stay in the lab for quite a while.

Title: "On-Line Identification of Driver State for Bowling Keeping Tasks"
Author: Pilutti and A.G Ulsoy

Description: Online recognizable proof of driver state is an attractive component of many proposed dynamic security frameworks (for example impact recognition and evasion, computerized roadway and street take-off cautioning frameworks).Here we consider driver state appraisal with regards to a street take-off cautioning and intercession framework. A framework distinguishing proof methodology, utilizing vehicle horizontal position as the info and guiding wheel position as the yield, is utilized to build up a replica and to constantly refresh its parameters amid driving. Driving test system results demonstrate that adjustments in the data transmission or potential specifications of such a model might be helpful markers of driver weakness.

Title : The Development of Drowsiness Warning Devices.

Author : Lizuka H,T.Kotaoka

Description: "Sluggish drivers ordinarily don't 'drop off' immediately. Rather, there is a previous time of quantifiable execution decrement with related psychophysiological signs." (Knipling and Wierwille, 1994). To help the driver with the issue of sluggishness, any framework must be deliberately created to give an interface and collaboration that bode well for the client. Such a framework must record for different possibilities and should likewise limit diversion from the driving assignment under ordinary conditions.

Title: Real-Time Invasive Detection of Driver Fatigue.

Author: Xuan Yu.

Description: Driver sluggishness is one of the real reasons for genuine car crashes, which makes this a region of extraordinary financial concern. Consistent checking of drivers' sleepiness along these lines is of incredible significance to diminish laziness caused mishaps. This proposed research built up a continuous, nonintrusive driver sluggishness discovery framework by structure biosensors on the car controlling haggle seat to gauge driver's heart beat signals.

Title : Optical Build-o\n Drowsiness Detecting for Real Driving Conditions

Author : I.Garcia,S.Bronte

Description: This paper exhibits a non-meddling methodology for languor discovery, in light of PC visibility. It is introduced in a vehicle and it can work under genuine activity conditions. An IR camera is set before the driver, in the console, so as to distinguish his face and acquire laziness pieces of information from their eyes conclusion. It works in a hearty and programmed way, without earlier alignment. The exhibited framework is made out of 3 phases. The first is proprioceptive, which incorporates face and eye location and standardization. The second phase performs understudy position identification and portrayal, consolidating it with a versatile fulmination separating to make the framework equipped for managing open air brightening conditions. The last stage figures PERCLOS from eyes conclusion data. So as to assists this framework, an open air database was created, comprising of a few investigations completed amid in excess of 25 driving hours. An examination about the execution of this proposition, appearing from this testbench, is introduced.

Title: Driver Weariness is one of the Significant reason for street crashes

Author: S.Bronte

Description: Driver weariness is a risky condition made when an individual is enduring manifestations of weakness while driving, every now and again coming about on account of the trancelike (Inducing rest; relieving or enchanting) sway especially in the midst of night time (top measurements amid the night can be on numerous occasions daytime levels) driving either falling asleep even from a pessimistic standpoint conceivable time or so drained they made veritable – and deadly – driving missteps.

CHAPTER 3

PROBLEM STATEMENT AND DEFINATION

3.1 MOTIVATION

Street mishaps have been a noteworthy issue for the majority of the nations. Studies demonstrates that the quantity of passing's because of street mishaps is expanding step by step making wellbeing a noteworthy concern. Driver sluggishness is one of the real reasons for street mishap in which driver's absence of focus on driving because of weariness. This proposed framework worries on staying away from mishaps caused because of lazy drivers.

3.2 PROBLEM STATEMENT

Usage of robotized laziness finding in driver utilizing iot innovation.

Auto collisions is a compromising marvel for individuals. As indicated by Turkish Statistical Institute, about 1.3 million car crashes happened all through 2012. A significant number of these mishaps ramification from drivers' being tired or sleeping. In Table 3.1, complete mishaps, mishaps including demise and individual damage, number of people slaughtered and harmed are recorded step by step somewhere in the range of 2008 and 2012.

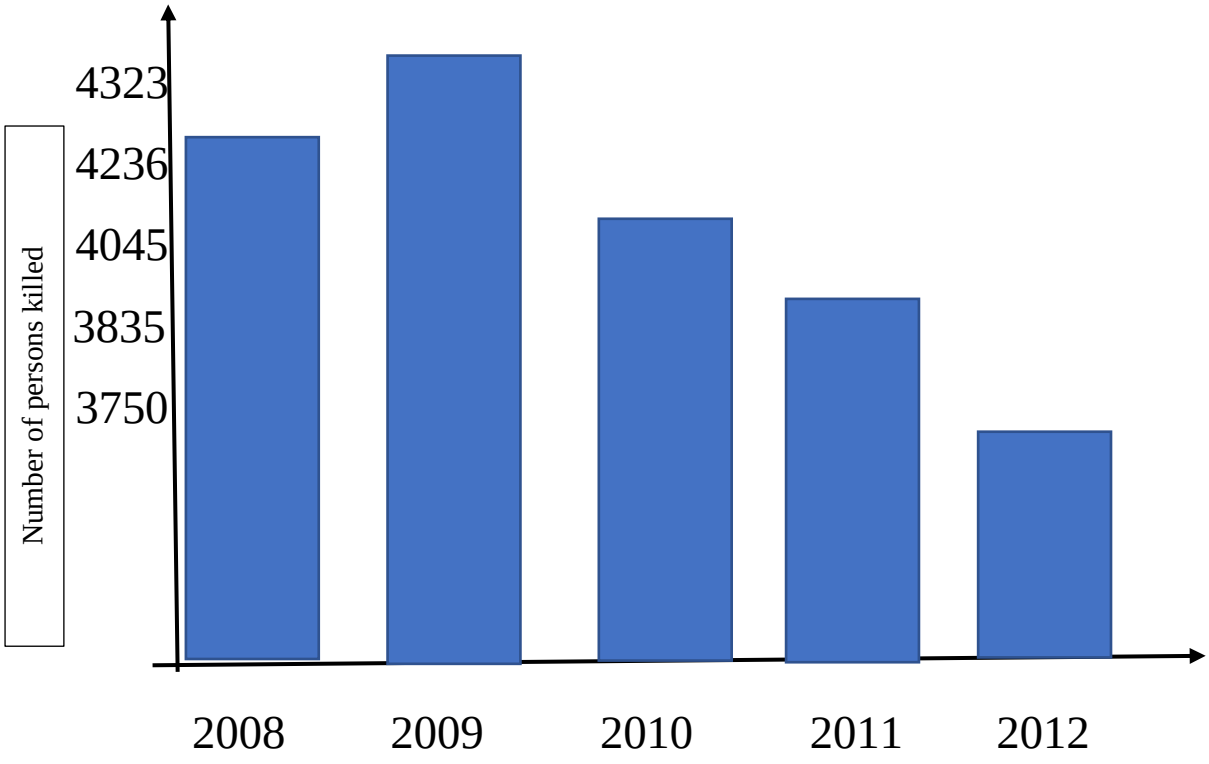

Figure 3.1: Drowsy Driving v/s Number of Persons Killed

Years	Total Accident	Misadventure Involving death and personal injury	Number of creatures killed	Number of persons Injured
2008	950120	104212	4236	184468
2009	1053346	111121	4323	201380
2010	1106201	116804	4045	211426
2011	1228928	131845	3835	238074
2012	1296634	153552	3750	268079

Table 3.1: Total mishaps, number of mishaps including demise and individual damage

Number of people executed and harmed somewhere in the range of 2008 and 2012 in Turkey. As indicated by Turkish measurable foundation the quantity of auto collisions increments continuously consistently. This isn't an issue of our nation; it is somewhat an overall problem. According to Federation for Safe Intercontinental Road Travel, about 1.3 million people pass on in the street crashes for every year, which implies 3287 passing's a day. The circumstance is comparative in the United states. Entropy demonstrate that every year 37000 people pass on in street crashes and 2.35 million are harmed or impaired.

Street crashes cost the United States $330.6 billions for every year. One of the fundamental reasons of auto collisions is tiredness driving. These Numbers are in all probability an Underestimation. Unless somebody witness or endures the auto collisions and can vouch for the drivers order, it is hard to recognize the driver being sluggish. 27% of overviewed American grown-ups said they have napped off while driving at least once and 67% said that they snoozed off while driving in the previous year In the USA, a arrangement of concentrates by the Federal Freightage Welfare Panel have called attention to the criticalness of drowsiness just like the cognition of mishaps including

substantial vehicles.

3.3 EXISTING SYSTEM

Street mishaps have been a noteworthy issue for the greater part of the nations. Studies demonstrates that the quantity of passings because of street mishaps is expanding step by step making security a noteworthy concern. Driver tiredness is one of the real reason for street mishap in which driver's absence of focus on driving and traffic because of weakness.

Driver weakness discovery with driver execution can be isolated into vision-based strategies and EEG-put together techniques based with respect to the flag they use. Vision-based techniques send one video catch gadget near the driver, which could be a camera. The camera will concentrate on the drivers' status and execution. At the point when the driver starts to drive the vehicle, the camera can screen the driver' s uncommon highlights by checking the picture of each casing and get suspected driver exhaustion crude information.

EEG-based techniques screen the electrical movement of the mind and spotlight on the 1-20 Hz band which relating to human's exercises. This strategy conveys an EEG procurement instrument on the driver' s head. The obtaining instrument was constantly gathering EEG signals for driver weariness acknowledgment.

3.3.1 Limitations of Existing System

With the assistance of picture calculation, the vision-based framework perceives the genuine driver exhaustion sections. In the a vast bit of case, the vision-set up together methodologies focus are as for the only a solitary kind of weariness features.. So they may flop in a specific case.

Contrasted and the vision-based strategies, EEG-based techniques legitimately endeavor to investigate the connection between the human personality and EEG signals.In any case, they are coarse-grained by somehow in light of the way that the banner they accumulate start from multi-zone of the cerebrum. Flag examination strategies are generally utilized in EEG-based recognition. As we would see it, the information gathering process for EEG-based strategies could be not happy for pragmatic use.

Other than EEG based strategies and vision-based techniques are exorbitant because of necessity of extraordinary hardware's or gadgets.

3.4 Proposed System

Tired driving cautioning framework will be actualize on cell phone with the assistance of one of picture handling calculation. Driver's face demeanour, for example, eye squinting , mouth position will ceaselessly screen by cell phone camera .If the driver face looks coordinate with sluggish parameter then cell phone will caution the driver. For crisis circumstance, programmed message send to the crisis contact list with its present area.

3.4.1 Advantages of Proposed System

- The Proposed framework is to Reduce street Accident because of Drowsy Driving.

- It will identify driver sleepiness and gives cautioning as vibration and Alarm.

CHAPTER 4

SYSTEM REQUIREMENT SPECIFICATION

There are number of hardware and software components used to execute this project successfully. Requirement identification is primary process for any kind of development .This chapter describes the requirement specifications of the project which are listed below.

4.1 FUNCTIONAL REQUIREMENTS

Functional Requirements describes the functioning of a product framework and how the application must act when provided particular information sources or conditions.The following specifications are the functional requirements of proposed system:

4.1.1 SOFTWARE REQUIREMENTS

Operating system :Windows

Language Used: Python 3.7

Processor:I3

Server:Putty

Web server: VNC

4.1.2 HARDWARE REQUIREMENTS

Hard disk: One GB or more

Sensor :vibration sensor

MCU:ESP324

Monitor : LED or LCD Monitor

Model: Raspberry pi

4.2 NON FUNCTIONAL REQUIREMENTS:

Non functional prerequist are not straightforwardly related with particular functionality provided by the framework. It also identifies the properties like dependability,time of reaction and store inhabitance, Non functional prereqiisties emerge through the customer necessity in view of finance limitations, arrangements on account of exterior elements such as :

- Performance
- Availability
- Security

CHAPTER 5

HIGH LEVEL SYSTEM DESIGN

This part examines the advancement model, framework engineering, information stream graphs, class outlines, use case chart and proposed arrangement. The underneath given design portrays the point by point data, operational procedure and control stream of every part.

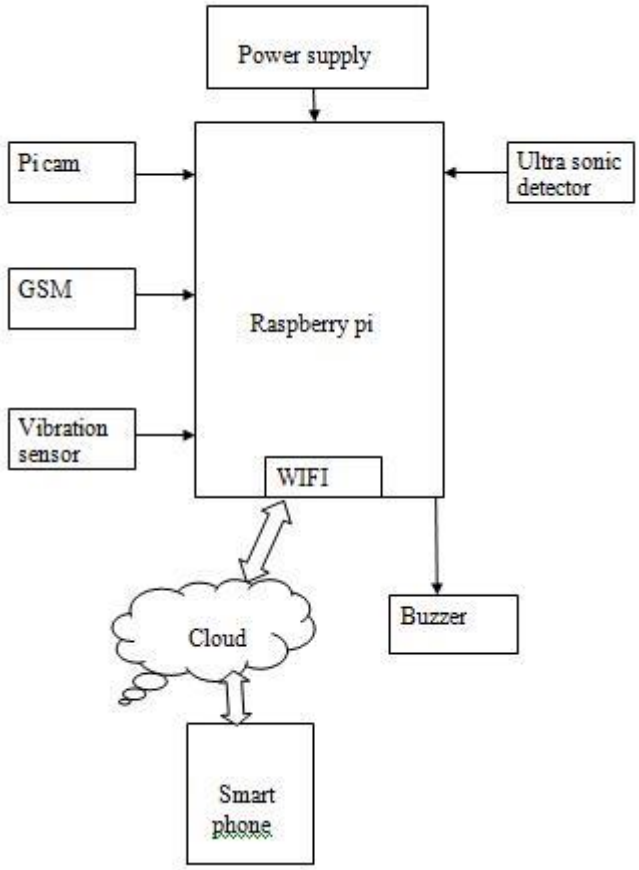

Fig 5.1:Schematic diagram of IOT build somnolent driver and Congestion crash system

Figure 5.1 shows the Schematic diagram of IOT build-on groggy driver alerting and bottleneck clash data system. It contains of Pi's cam, Expeditious detector, Shaking sensor, Wireless telephone which are linked to Raspberry pi3.

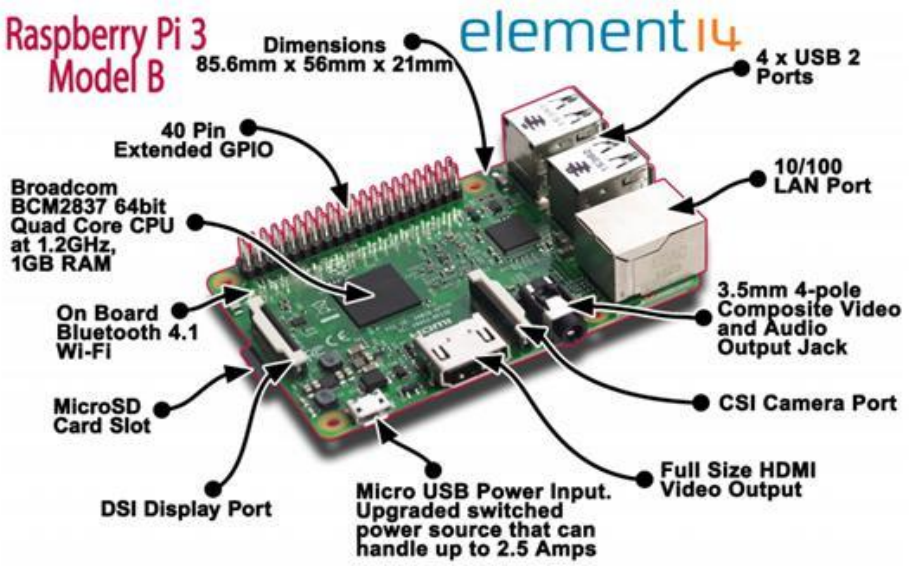

Fig5.2: Raspberry pi3 model B

Raspberry pi 3 model is speedier processor on board to extend speed this module is low essentialness abilities to improve the helpfulness and ability to earth shattering contraption over the usb- ports. Figure5.2 demonstrates Raspberry pi3 mock-up has four inbuilt USB power line Adopter are utilized to interface mouse, Keyboard. There is no different power catch in Raspberry-pi it will begin when associate with the power supply it very well may be turn off just by evacuating the power supply.

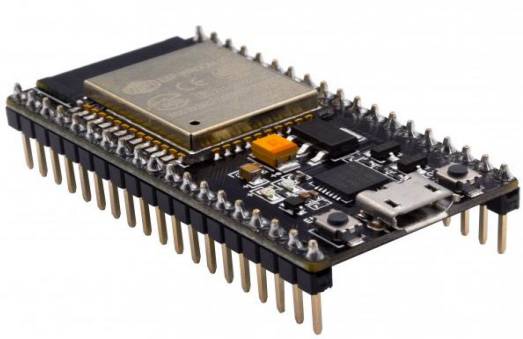

Figure 5.3 :Node MCU

Node MCU firmware designers submit or add to the task on GitHub and should need to construct their own undeniable form condition with the total device chain.

The Node MCU depends on the ESP32 microcontroller that flaunts Wi-fi, Bluetooth, Ethernet and Low Power bolster all in a solitary chip.

The Node MCU ESP-32S goes with a successive to-usb chip on board that licenses programming and opening the UART of the ESP32 module. Drivers may be required depending upon your structure (Mac or Windows) and can be download from the expert press if documentation page. The Silicon Labs MCUs are designed to allow developers to use sensor devices and meet low requirements consumption energy. Energy use of sensors in sleep mode satisfies the low power balances, even the most demanding embedded 32-bit MCU based systems with low power interface (LESENSE) in the Silicon Labs EFM32 MCU.

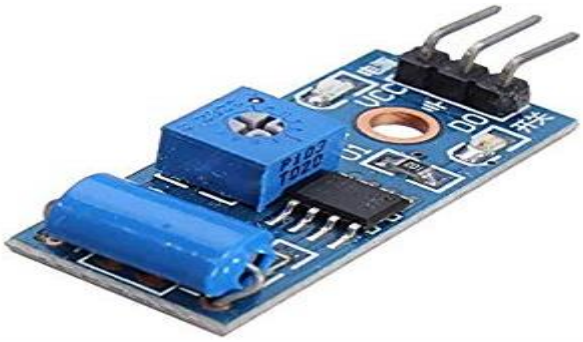

Figure 5.4:Vibrate Sensor

Oscillation sensors will be sensors for approximating, airing, and breaking down fleet speed, relocation and vicinity, or hastening speed. Trembling — anyway inconspicuous and unmarked by human discover — is an evidence of instrument states. Unusual vibration demonstrative of issues with a mechanical machine can be identified early and fixed before the occasion of machine disappointment; on the grounds that such a disappointment is conceivably exorbitant as far as time, cost, and profitability, vibration estimation enables modern plants to build proficiency and set aside some cash. Thusly, vibration investigation is utilized as a device to decide hardware condition just as the particular area and kind of issues.

5.1 Working Principle of Vibration Sensor

It takes a shot at electro mechanical standard vibration speed sensors work as per the electrodynamic guideline and are utilized for estimating the bearing total vibration.

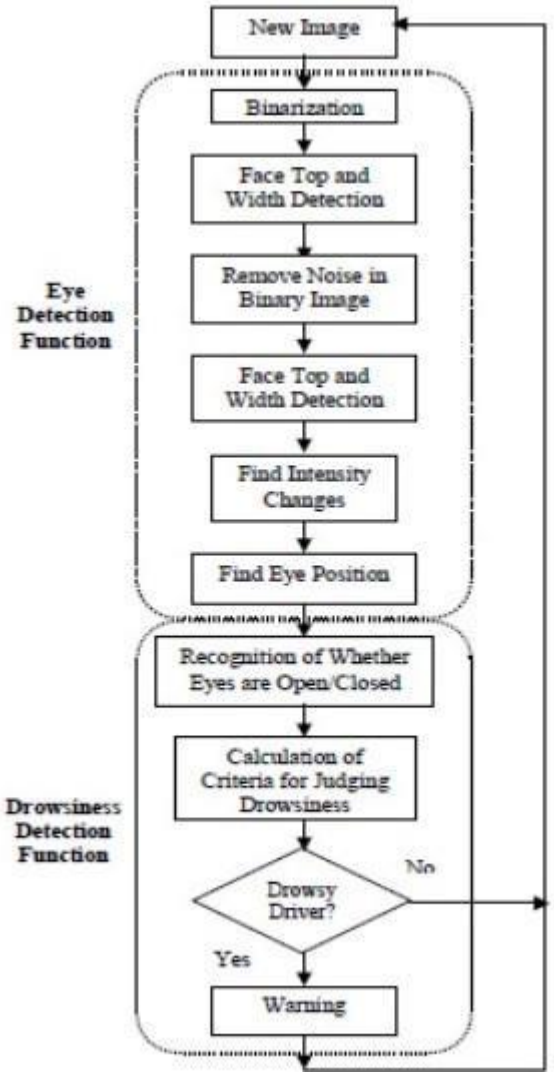

Fig 5.5:Flow chart for detecting drowsiness

Above observe demonstrates flowchart to eye recognition capacity and laziness location work. Subsequent to contributing a facial photograph, pre-preparing is first completed by method for binarizing the image. The apex and abets of the face are identified to limit the region of in which the eyes exist. Utilizing the edges of the face, the focal point of the face is found, so as to be utilized as a kind of perspective while assessing the left and right eyes.

The patronage stages in the eye recognition slog is deciding the This is significant since restricting the layout of the face narrows down the area of the eyes are, which makes it simpler to confine the situation of the eyes.

The third step is expulsion of clamor in the parallel picture is exceptionally effortless. The way to this is to on at facing north and upright fringe of the face. After evacuating the dark masses on the face , the edges of the countenance are found once more.

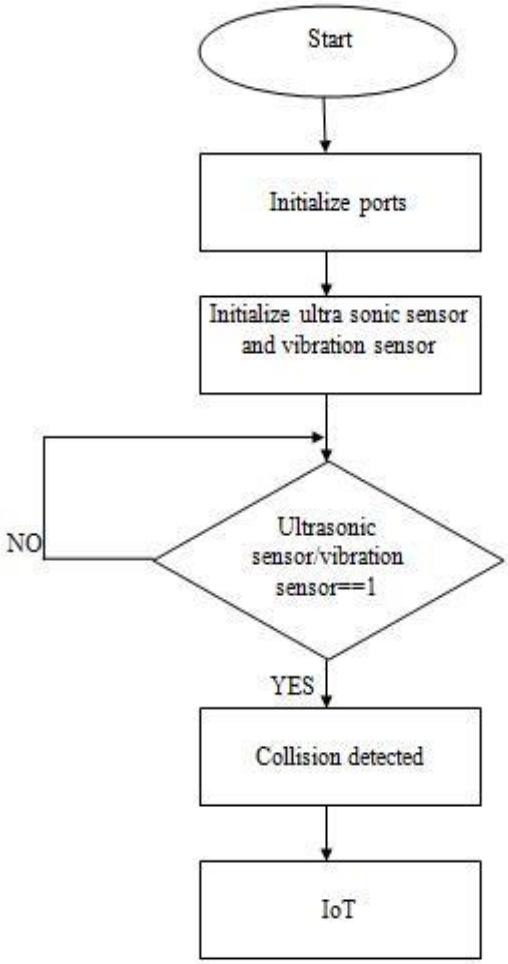

Fig 5.6 : Flow chart for collision detection

Crash Detection can be recognized by using Vibration Sensor if any Collisions occurred by two one of a kind things Immediate Message will be sent to the emergency Contact List.By Default the regard will be set to 0.If any Collisions occur then automatically changes to 1.

CHAPTER 6

IMPLEMENTATION

This part examines about the module savvy execution and the calculations utilized in this proposed system.. The following are the means of distinguishing driver sleepiness and alarming by warning.

6.1 Introduction on Open CV

Open CV was started in the year 1999 by Gary Bradskey member of Intel and the principal release turned out in 2000. Later its energetic improvement proceeded under the supported to pursue Garage,with Gary Bradskey and Vadim Pisarevsky driving the task.

6.1.1 **Installing OpenCV python in windows**

1.Below python bundles are to be downloaded and introduce to there default areas.

1.1 Python 3.7x

1.2 Numpy

1.3 Matplotlib

2. Install all bundles into their default Locations. Python will be introduced to C:/Python37/

3.After establishment open python IDLE .Enter import Numpy and ensure Numpy is working fine.

4.Download most recent OpenCV discharge from sourceforge website and double tap to separate it.

5.Goto OpenCV manufacture/python/3.7folder

6.Copying cv2.pyd to C:/python37/lib/sitepackages

7. Type import CV2 and create CV2.

STEP 1:BINARIZATION

Twofold icon is a picture in which each and every element expect the estimation of just two detached values. In this case the rank are 0 and 1 , 0 rebuking to unlighted and 1 reprimand to white. With parallel picture it is whatever but demanding to recognize entity from the base. The greyscale picture is changing over to a double picture through thresholding.

STEP 2:PROFILE BRINK AND SPAN DETECTION

The following subsequent stage in the eye recognition work is deciding the top and side of the motorist face. This is significant since restricting the blueprint of the face tampered down the district of the eyes are, which makes it uncomplicated to limit the situation of the eyes.

STEP 3:EJECTION OF CLANGOUR

The expulsion of commotion in the twofold picture is candid. The way to this is to on at sinistral and without error edge of the face. Otherwise the data of where the edges of the face will be lost. After expelling the dark masses on the face , the extremity of the face are found once more.

Step 4: FINDING VIGOUR COINAGE ON THE FACE

The subsequent stage in finding the eyes is finding the force changes on the face, This is finished utilizing the first picture, not the paired picture. The initial step is to compute the normal force this depends on the documentation that are from the highest point of the face , gripping down the primary power modulation is the eyebrow, and the following change is the further-up edge of the eye.

STEP 5:REGULATING THE CONDITION OF THE EYE

The condition of the eyes (regardless of whether it is open or shut) it is controlled by separation between the initial two force changes found in the above advance. At the point when the eyes are shut, the separation between the directions of the force changes is bigger, whenever contrasted with when the eyes are open. The impediment to this is if the driver draws their face nearer to or further from the camera lucida. The separations will differ, since the quantity of pixels the face takes up fluctuates. In view of this constraint, the framework created expect that the motorist face stays nearly a similar separation from the camera consistently.

STEP 6:CONCLUDING GROGYNESS

At the sharp end when there are 5 back to back casings and the eye shut, at that point the vigilance is actuated, and a driver is alerted to wake up. Criteria for passing judgment on the sharpness level based on eye conclusion.

6.2 Code to Connect wi-fi Module.

```
#define BLYNK_PRINT Serial

#include <ESP8266WiFi.h>

#include <BlynkSimpleEsp8266.h>

BlynkTimer timer;

int collision = 16;

int collisionval;

int drowsy = 5;

int drowsyval;

char auth[] = "3d41f3f773b8402a8080781d12c4b291";

char ssid[] = "Rakshitha";

char pass[] = "80642871238";

void setup()

{ pinMode(collision,INPUT);

  pinMode(drowsy,INPUT);

  Serial.begin(9600);

  Blynk.begin(auth, ssid, pass);

  timer.setInterval(1000,collisionsensor);

  timer.setInterval(1000,drowsypin);
```

```
  }
  void drowsypin(){
    drowsyval=digitalRead(drowsy);
    if(drowsyval == HIGH){
      Serial.println("Driver is drowsy");
    Blynk.notify("Driver is drowsy");
}}
  void collisionsensor(){
    collisionval=digitalRead(collision);
    Blynk.virtualWrite(V0,collisionval);
    if(collisionval == LOW){
      Serial.println("Met with an Accident");
       Blynk.notify("Met with an Accident");
    }
```

CHAPTER 7

TESTING AND VALIDATION

The primary point of testing process is finding a blunder that is the mistakes which happen due to possible All the code which is running inside in programming must be approved.

Unit testing

Unit testing mainly does a designing of test cases, which validate the test cases design that is the one which perform whether internal program function logic is performing well or not, and whatever the input given to that program whether it produces a desired output.

Integration Testing

Testing is a process of event driven and it is most concern with outcome of a particular field. In this testing every one of the segments will be as of now tried separately in a unit testing process, the incorporation testing is performed in the wake of coordinating the individual segments to check whether programming parts delivers an ideal yield for the substantial contribution after joining of all the individual units.

White box testing

Here person who does this type of testing will know the how software is working inside and as well as its language of the software will be known to the tester or at least purpose of the software.

Black box testing

Here tester will not a have idea about how the software is working or the structure of the software as well as what is the language of the software module being tested. It is a testing mechanism in which the software we are using for the test is treated as a black box, here tester will provide input and expects desired output without concern about how the software is working.

7.1 TEST STATERGY

- All fields which have been entered must work properly.
- Pages which we considering they have to be active from the respective identification link.

SYSTEM TEST

System testing is the one which has to make sure that the entire integrated software system and Hardware will meet the requirement. It tests the configuration to make sure that results will be predictable form.

7.2 TEST CASES

TEST CASE NO	TEST CASE	EXPECTED RESULT	TEST RESULT
1	Driver Driving Vehicle	NO Accident	NO Accident
2	Driver Driving Vehicle with Drowsy	Chances of Causing Accident	Accident may Occur
3	Vibration Alert to Driver	Driver Alert	Driver gets Alert
4	Driver Not Alerted	Message sent to the Owner	Message sent to the Owner
5	Crash between two Vehicles	Message sent to emergency contact list.	Alert message to Emergency contact list

Table 7.1: Test Cases Performed for the Proposed Application

CHAPTER 8

EXPERIMENTAL RESULTS

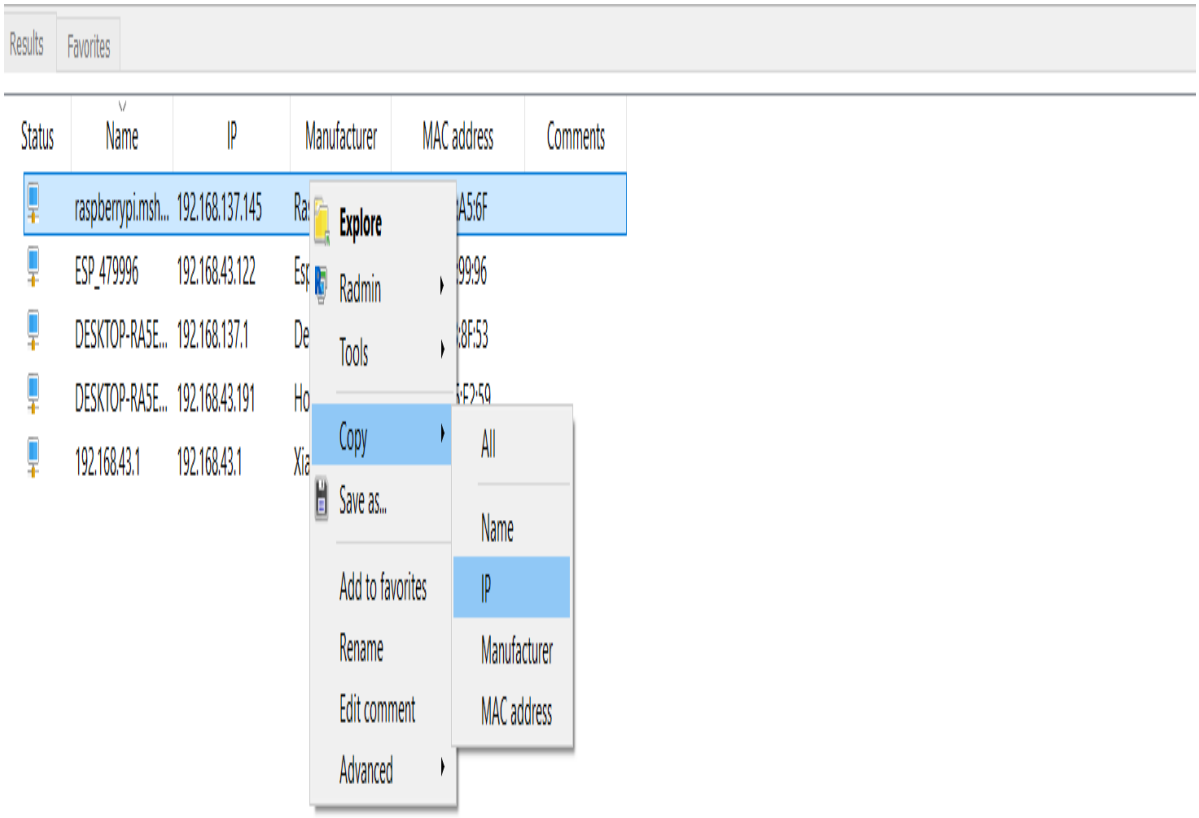

Fig 8.1 :Copying Raspberry pi IP

In the Above Figure 8.1 we need to Install Advanced IP Scanner which helps to scan all the available Raspberry pi IP Address. Among all select raspberypi_msh Name for scanning IP Address. Scanning of IP Address gives Information's like Status, Name of Connecting Devices, Manufacturer, MAC Address etc….In this selected IP Address need to be Copied in Putty Software.

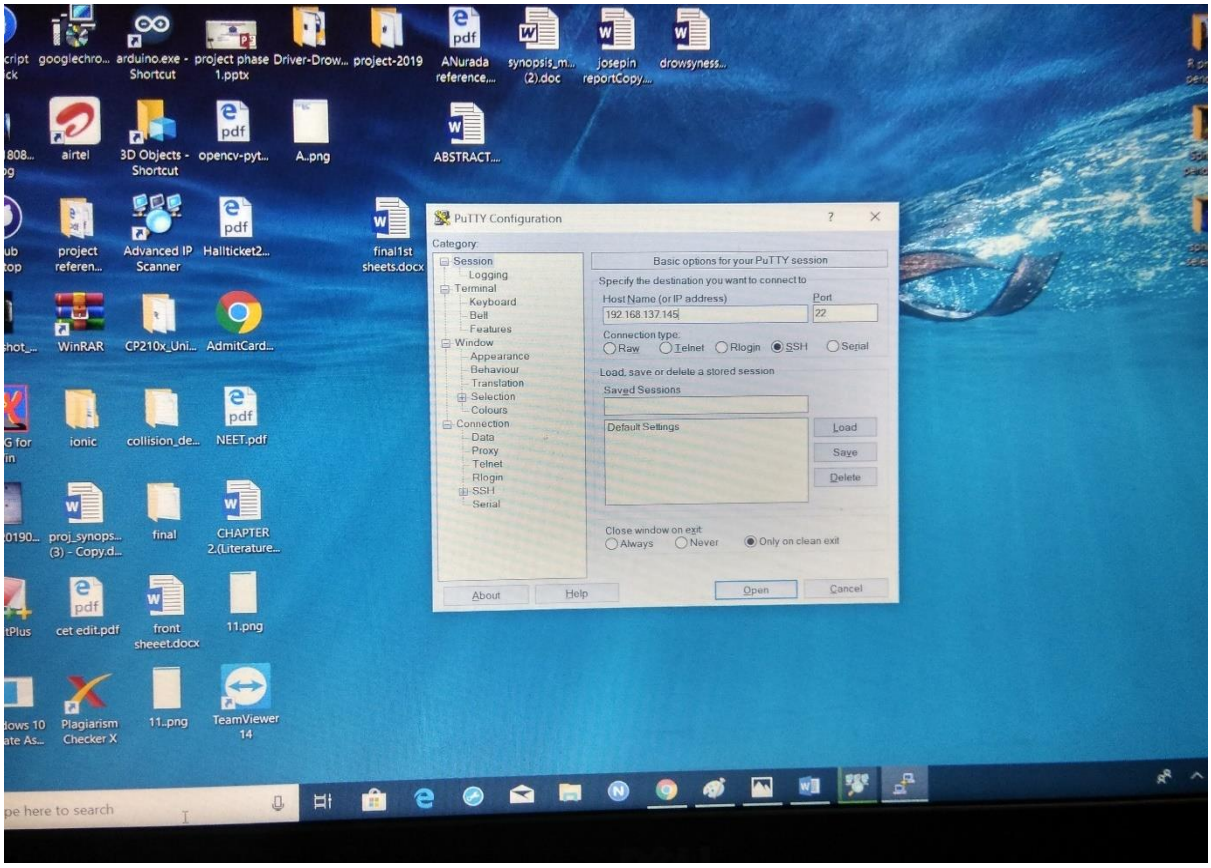

Fig 8.2 Configuring IP Address

Figure 8.2 Shows the Configuring IP Address in Advanced IP Scanner is Copied in the PuTTY Configuration at the place of Host Name (192.168.137.145). This Configured IP Address keeps on changing due to Different Connection on System.

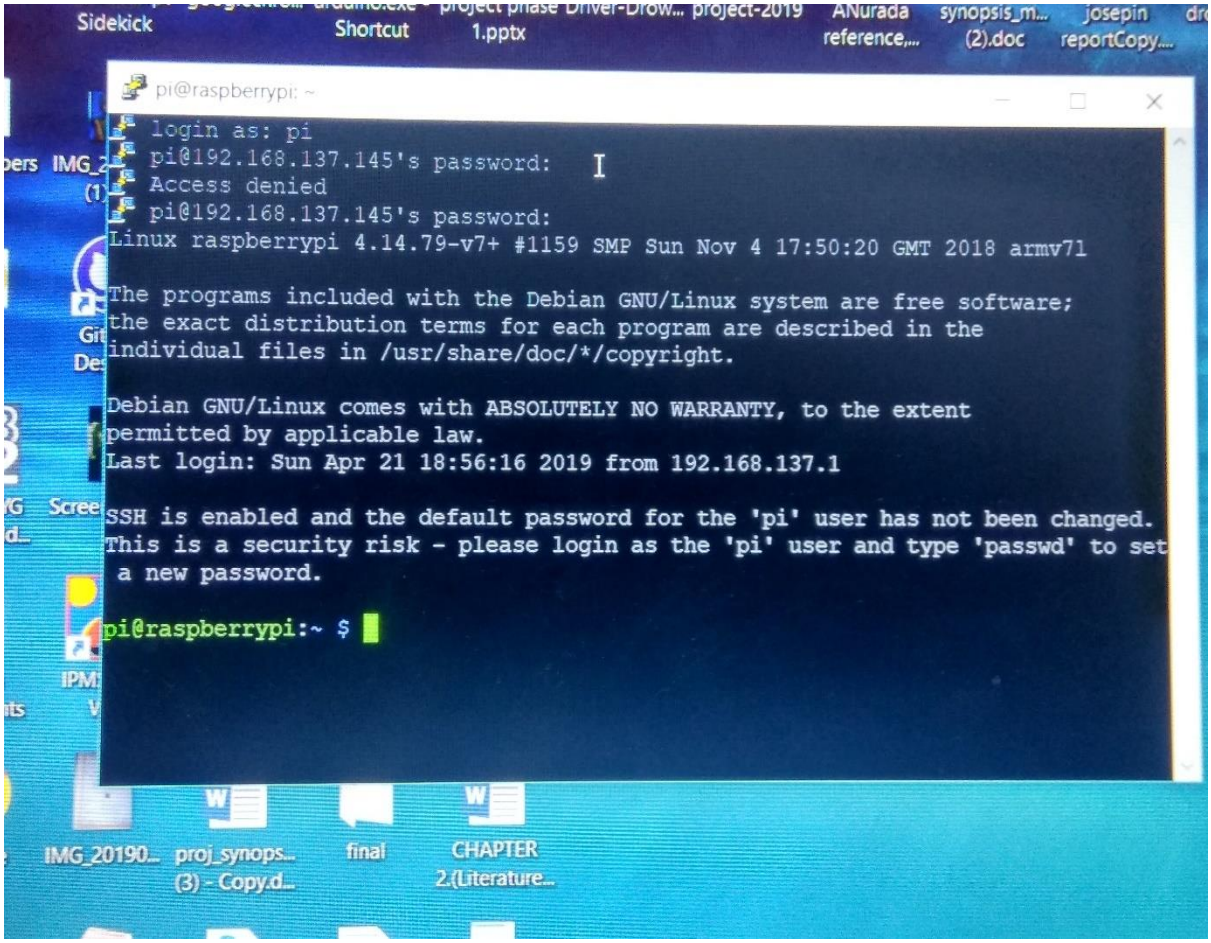

Fig 8.3 :Raspberry pi Login Terminal

In the Above Figure 8.4 Shows the Raspberry pi Login Terminal this login helps to enter in to the VNC Server. It asks two Permissions like Login as and Password. If it matches correctly then only it logins to the VNC Server for future work.

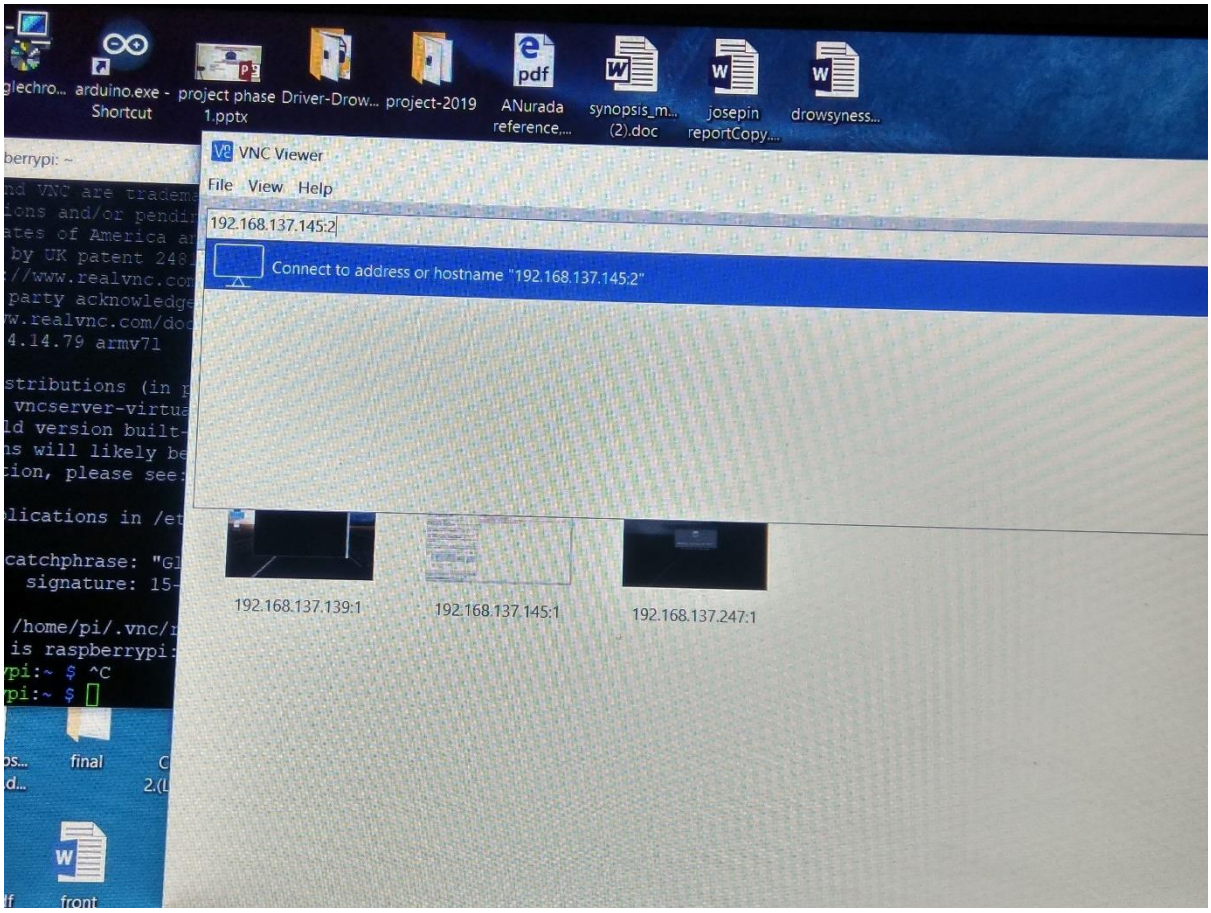

Fig 8.4: VNC Viewer Login

Figure 8.4 shows the VNC Viewer Login in the figure 8.3 we get Raspberry pi IP Address with port number those data are copied in this VNC Viewer .which helps to enter the Credential's expected by VNC Server running on the Remote Computer.

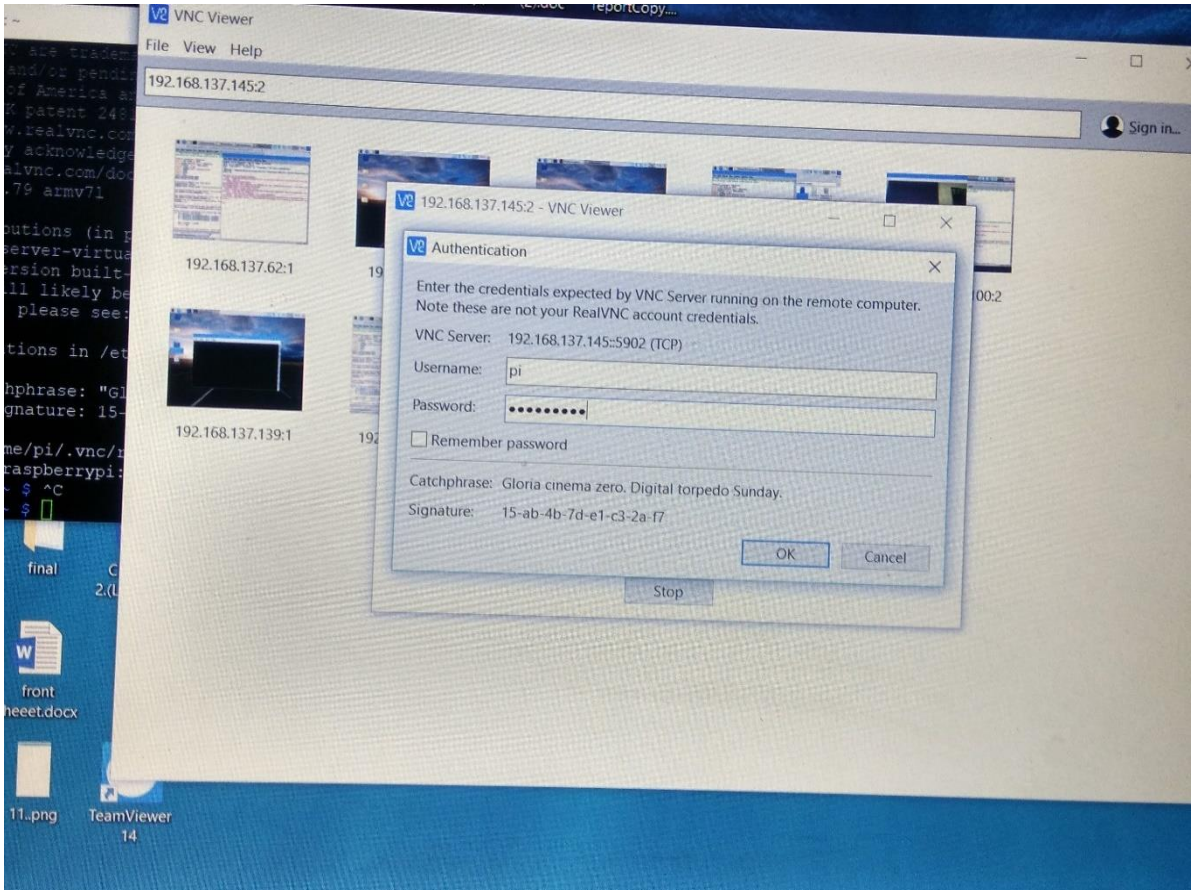

Fig 8.5:VNC Viewer Authentication

Figure 8.5 Shows the VNC Viewer Authentication Login as PI and Password as raspberry.These are not our real VNC account credentials.The Signature of VNC Authentication can be 15-ab 4b-7d-e1 c3-2a-17.

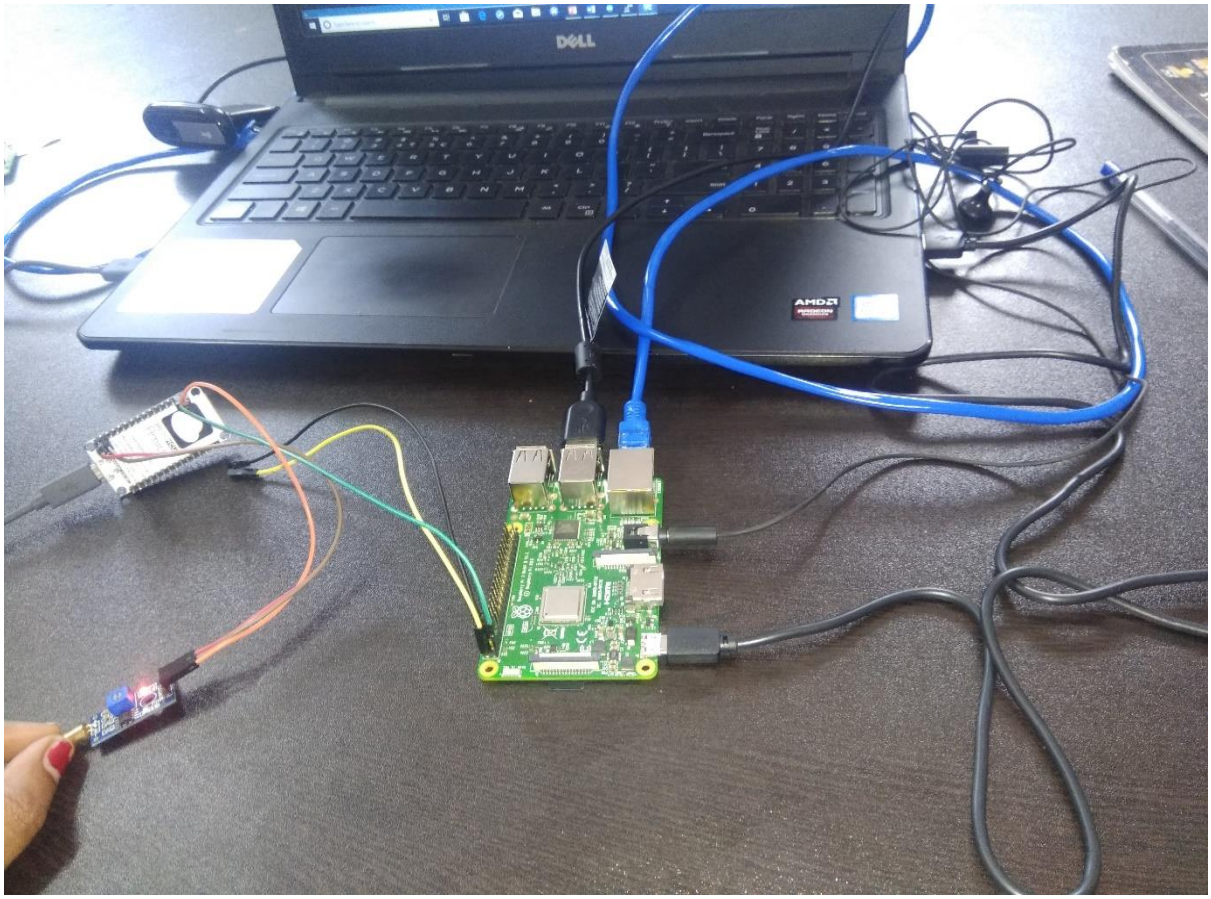

Fig 8.6: Experimental Connection

Figure 8.6 Shows Experimental Connection Between all the Hardware and Software Components. Mainly we uses Raspberry pi which connects LAN cable ,pi cam, Power Supply and Node MCU.Node MCU interns Connects to the Vibration Sensor by D1 Supply, GND Connection and Vin Supply.

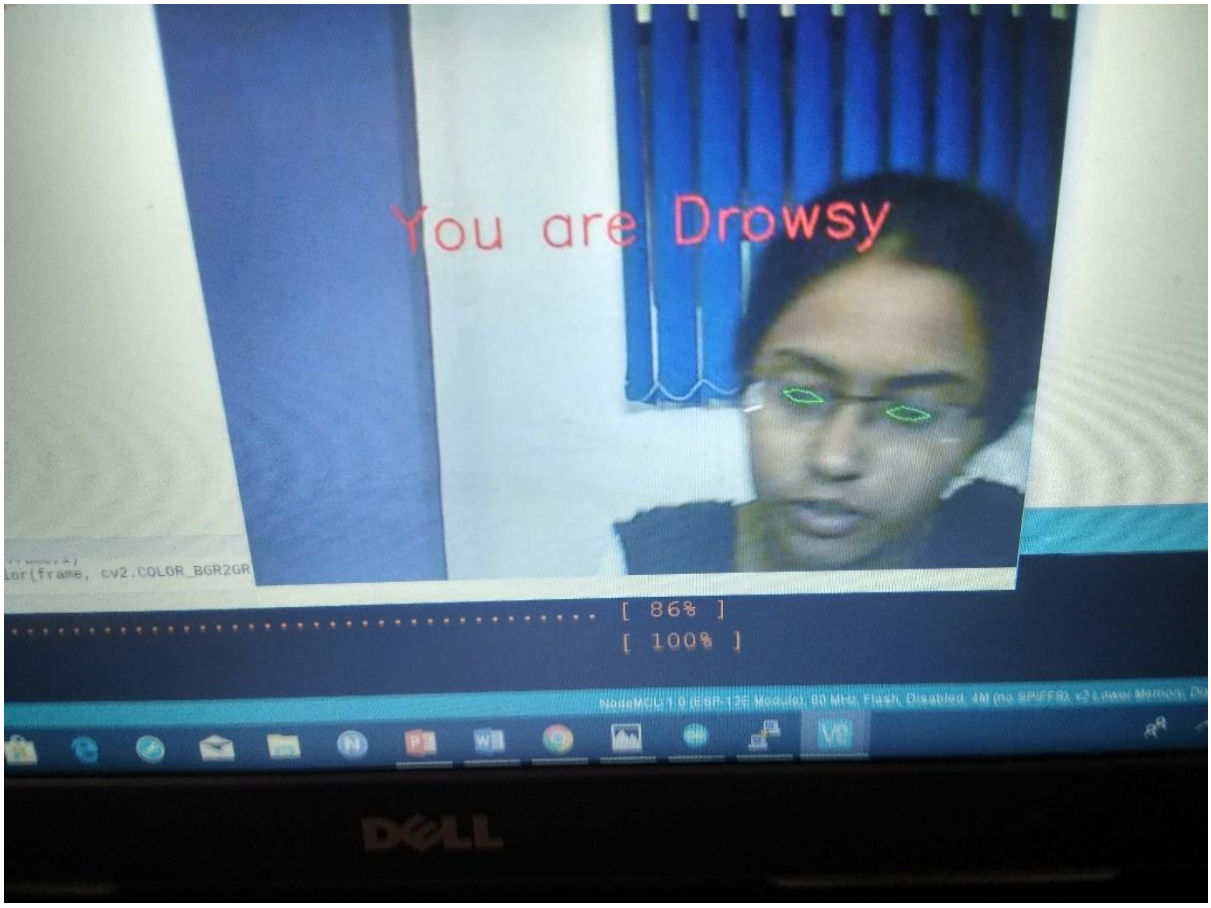

Fig 8.7: Driver Under Fatigue

Figure 8.7 ShowsSS Driver Under Drowsiness when Driver Travels continuously around 4-5 hours then the Drivers are not capable of Controlling there sleepy .If Driver falls in fatigue Our Components helps to Alerting with Vibration Sound.

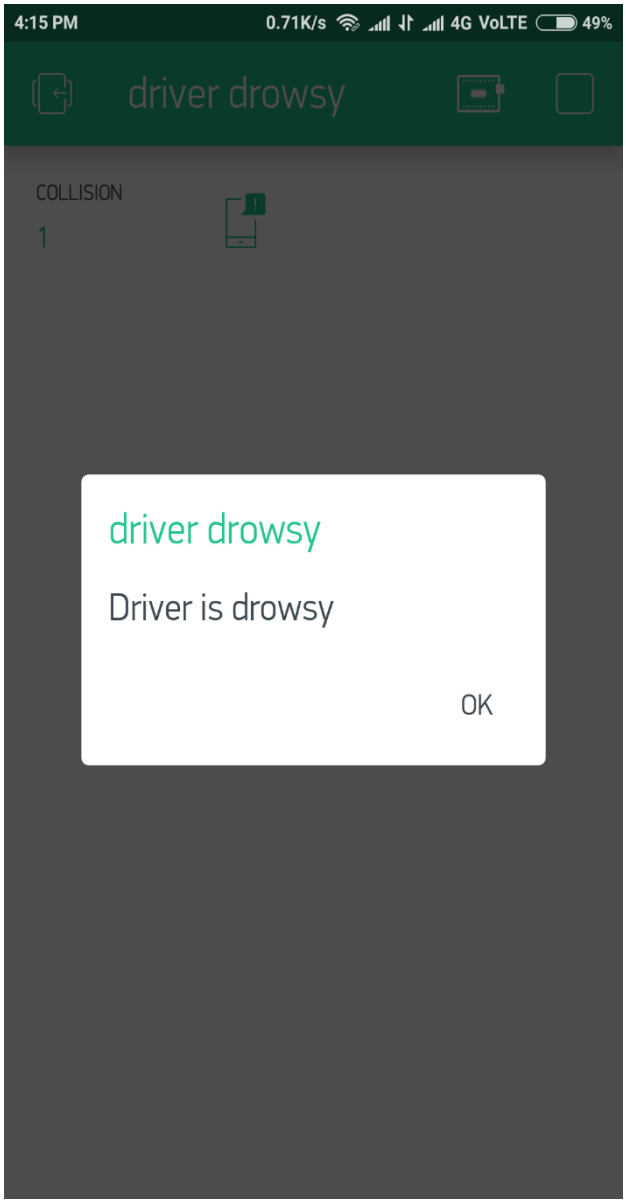

Fig 8.8: Driver Drowsy Message

Figure 8.8 Shows that During the Driver Driving If Driver can't be Consciousness after Alerting by Vibration Sound. Then Message will Sent to the Concerned Persons.

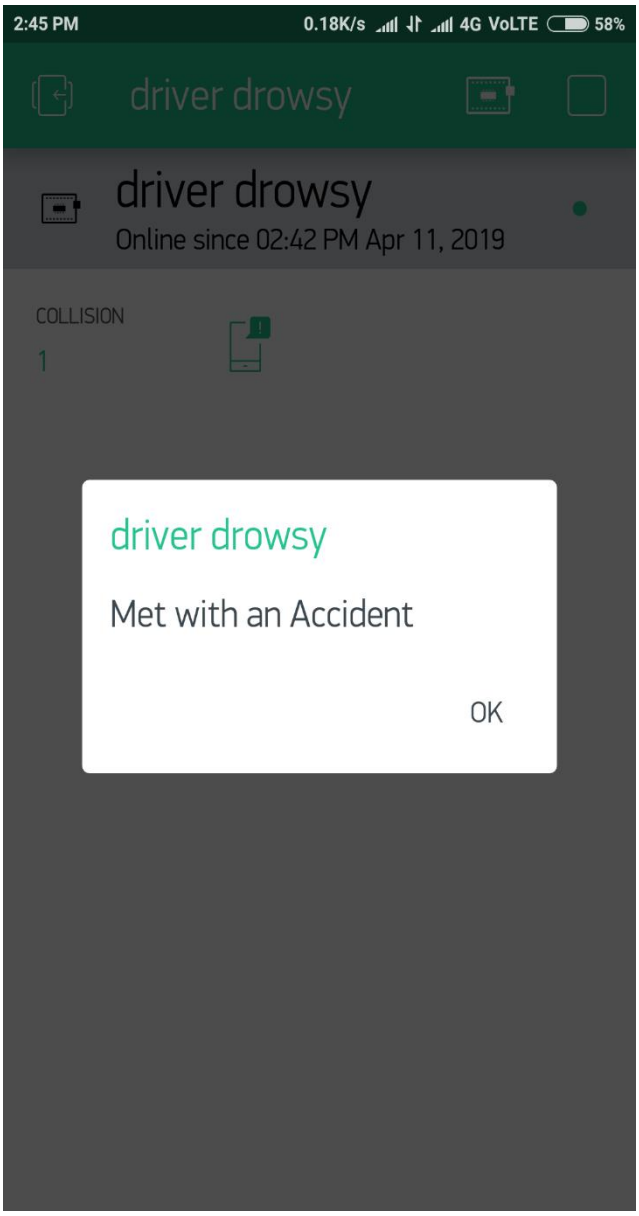

Fig 8.9: Accident Message Sent to the Mobile

Figure 8.9 Shows that ,Driver not Alerted Due to More sleepy, if Driver Met with an Accident then Emergency Message Sent to the Near by Hospitals or Relatives.

CONCLUSION

In this Work Proposed System Will decreases the Accidents and framework will screen facial mean while it will be ready driver on exhaustion condition. It expects to limit the passings that happens worldwide because of street mishaps and to expand the life expectancy and driver's death rate of individual. This is a result of the way that the driver can't control his vehicle when he is snoozing and when, he understands it, this is an Accident. In this way, we structure a self-Adaptive strategy to recognize the Driver exhaustion.

Car accident Information System Will identify the Collision and Instantly Automatic Message to Nearest Hospitals, Relatives as Per Database.

FUTURE ENHANCEMENT

- Rather than using an Alarm we can use Knee-jerk Braking System which will Diminish the Speed of the Vehicle.
- Instead of Alerting the Driver by Alarm Sound We can Use Some Sprays.

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