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Accident Detection and Tracking of Vehicle

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ABSTRACT: Transportation has great importance in our daily life and it's development has made many of our chores much easy. In recent years there have been numerous road accidents due to careless driving of the drivers. Due to this many lives has being lost. IoT based vehicle accident detection system using Raspberry Pi and GPS has gained attention. When accident occurs this system sends short message to a mobile number via internet. Message will tells about the location where the accident occurred. This message will also give the information to the nearby health care centers and rescue Department Team. Mainly in our project proposal vehicle is monitored by accelerometer. When accident detected it sends signal to raspberry pi and controller sends message and gps location to concerned numbers. Then we can easily save the persons so then easily death rate due to accidents also reduces

KEYWORDS: Raspberry pi 3, Accelerometer sensor, GSM and GPS, Push Button Switch, DC Motor.

I. INTRODUCTION

As the usage of vehicles is increasing drastically, the hazards due to vehicles is also increased. The main cause for accidents is high speed, drunk and drive, diverting minds, over stress and due to electronic Gadgets. This paper deals with accident detection system that occurs due to carelessness of the person who is driving the vehicle? This introduces accident alerting system which alerts the person who is driving the vehicle. If the person is not in a position to control the vehicle, then the accident occurs. Once the accident occurs to the vehicle this system will send information to near by hospitals.

1.1 Existing System:

In the existing system, when an accident occurs. It won't specify the location or alerting message. Due to this it is difficult to find the location and also chances of rescuing a person are less. Nowadays the accidents are occurring due to the driver drowsiness and improper working of the vehicle and lack of knowledge of driving skills . So many of the peoples drive the vehicle by drinking the alcohol it is the one of the main reason for the occurring of the accidents. In the existing system, when an accident occurs. It won't specify the location or alerting message. Due to this it is difficult to find the location and also chances of rescuing a person are less. This introduces accident alerting system which alerts the person who is driving the vehicle. If the person is not in a position to control the vehicle, then the accident occurs. There is no these facilities in the existing system so To incorporate the these facilities we proposed this project. Nowadays the accidents are occurring due to the driver drowsiness and improper working of the vehicle and lack of knowledge of driving skills This project proposal gives the many advantages to resucue the injured person during the accidents.

II.LITERATURE SURVEY

H. Bertoia, A. Broggi, M. Del Rose, C. Caraffi, M. Felisa and G. Vezzoni, "Farinfrared stereo vision for pedestrian tracking," do a night out on the road based on a planar reflection This system grades the pixels of the route image. If the robot hears any sound after the area is quiet and it starts moving towards the sound on its predefined path. Here a planar reflection model is practical with an infrared camera to distribution of the strength of the different pixels. For that, aclassification based on pixels is used to test whether or not the various pixels belong to the lane. If it only decides the surface of the road then the further cycle starts.

Komal Muraskar 1 , Devendra Bire 2 Sakshi Dafare 3 , Renuka Bhojar 4 , Shital Parate 5 D. M. Khatri 6 1,2 B.E. Students, 3 Assistant Professor Department Of Electronics and Telecommunication, Rashtrasant Tukdoji Maharaj University, Nagpur, Maharashtra, India has a system uses the system for women safety but it is a predefined path not for the all the ways to be travelled, it won't work in all time.

III.METHODOLOGY

Raspberry PI (Small powerful CPU) is a controller its purpose is to process the data. Initially the accelerometer senses the vibrations or acceleration of a vehicle. If accident detected then controller sends the alert message to concerned numbers. The Raspberry pi module is the heart of the this project proposal. It is used to process the data taken by the sensors. At powering the project the accelerometer sensor continuously monitors the the vehicles it means it detects the object means vehilcle inclination and also it measures the acceleration of the object or vehicle this data is fed to the microcontrollers if any accident occurs that only detected by the accelerometer sensor after accident detection the raspberry the controls the gsm module and gps module to send the alert messages to the concerned numbers and to access the location of the accident detection.

3.1BLOCK DIAGRAM:

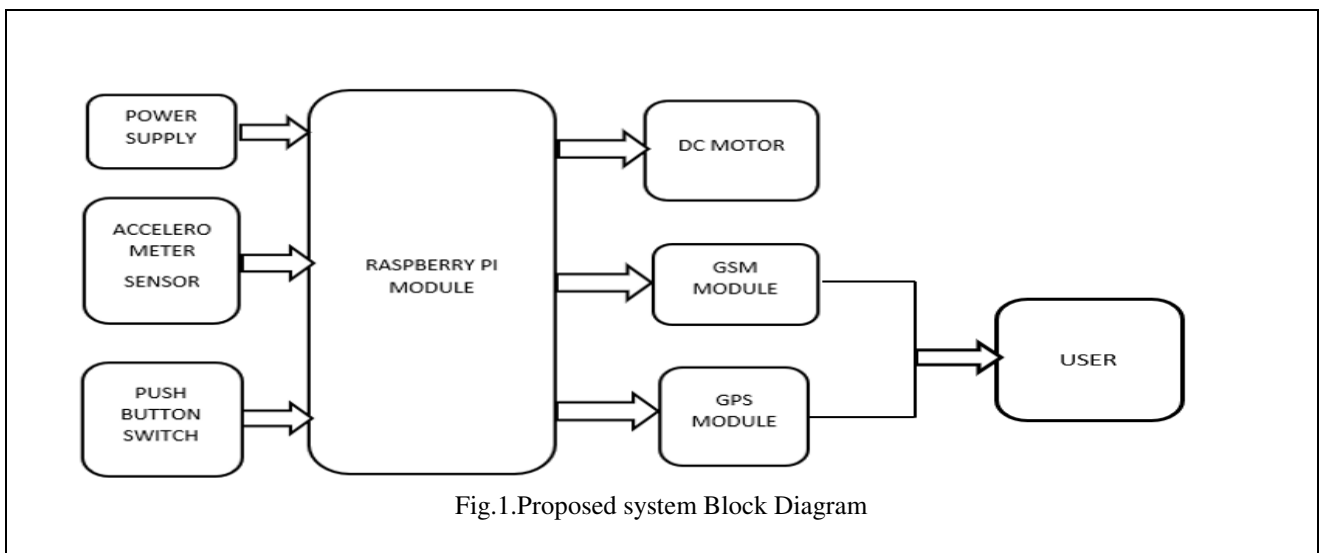


Fig.1.Proposed system Block Diagram

3.2 Flow Chart:

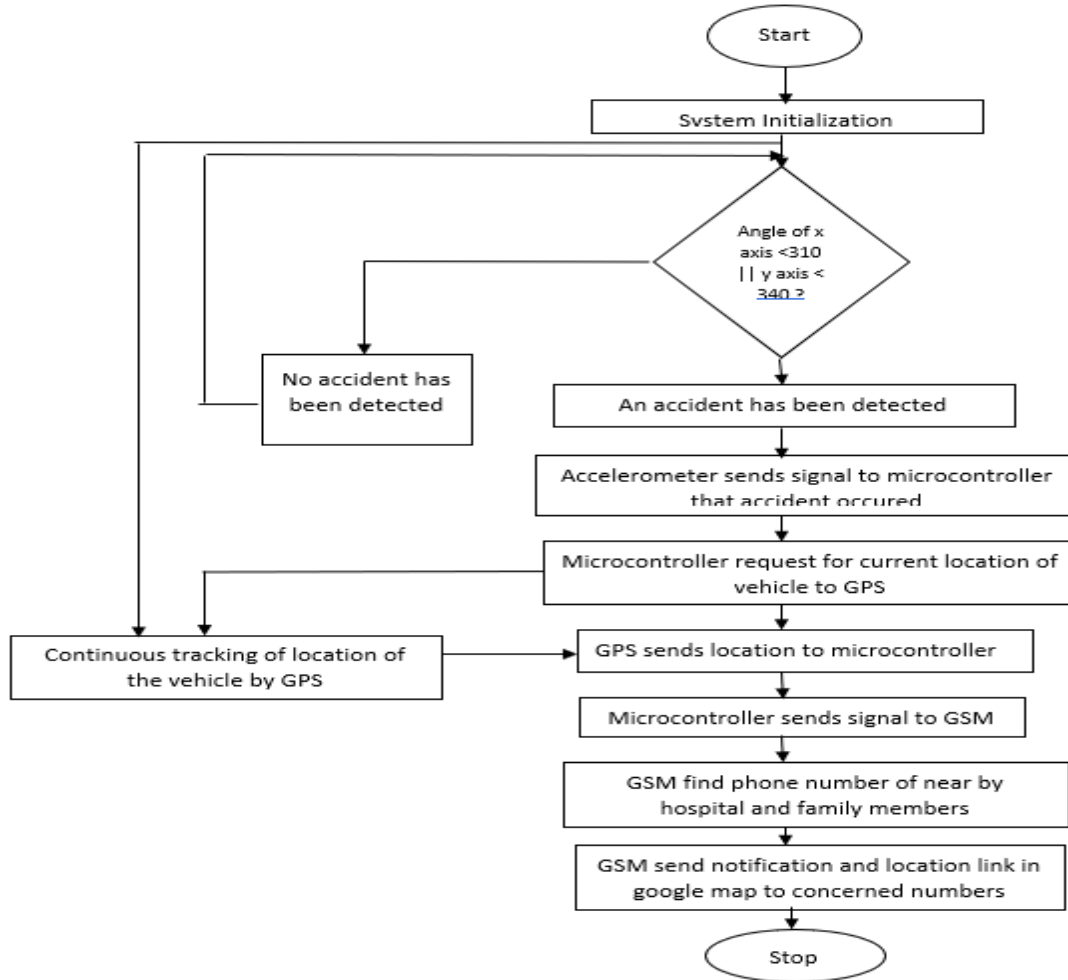


Fig.2.Flow chart of Proposed System

3.3.Hardware Components

- ❖ RASPBERRY PI 3+
- ❖ D.c Motor
- ❖ GPS

IV.GLOBAL POSITIONING SYSTEM (GPS)

The **Global Positioning System (GPS)** is the only fully functional Global Navigation Satellite System (GNSS). The GPS uses a constellation of between 24 and 32 Medium Earth Orbit satellites that transmit precise microwave signals, which enable GPS receivers to determine their location, speed; GPS was developed by the United States Department of Defense. Its official name is **NAVSTAR-GPS**. Although NAVSTAR-GPS is not an acronym, a few back acronyms have been created for it. The GPS satellite constellation is managed by the United States Air Force 50th Space Wing.

Global Positioning System is an earth-orbiting-satellite based system that provides signals available anywhere on or above the earth, twenty-four hours a day, which can be used to determine precise time and the position of a GPS



receiver in three dimensions. GPS is increasingly used as an input for Geographic Information Systems particularly for precise positioning of geospatial data and the collection of data in the field. Precise positioning is possible using GPS receivers at reference locations providing corrections and relative positioning data for remote receivers. Time and frequency dissemination, based on the precise clocks on board the SVs and controlled by the monitor stations, is another, use for GPS. Astronomical observatories telecommunications facilities and laboratory standards can be set to precise time signals or controlled to accurate frequencies by special purpose GPS receivers.

Similar satellite navigation systems include the Russian GLONASS (incomplete as of 2008), the upcoming European Galileo positioning system, the proposed COMPASS navigation system of China, and IRNSS of India. Similar satellite navigation systems include the Russian GLONASS (incomplete as of 2008), the upcoming European Galileo positioning system, the proposed COMPASS navigation system of China, and IRNSS of India. Following the shooting down of Korean Air Lines Flight 007 in 1983, President Ronald Reagan issued a directive making the system available free for civilian use as a common good. Since then, GPS has become a widely used aid to navigation worldwide, and a useful tool for map-making, land surveying, commerce, scientific uses, and hobbies such as geocaching. GPS also provides a precise time reference used in many applications including scientific study of earthquakes, and synchronization of telecommunications networks.

A GPS receiver calculates its position by carefully timing the signals sent by the constellation of GPS satellites high above the Earth. Each satellite continually transmits messages containing the time the message was sent, a precise orbit for the satellite sending the message (the ephemeris), and the general system health and rough orbits of all GPS satellites (the almanac). These signals travel at the speed of light through outer space, and slightly slower through the atmosphere.

The receiver uses the arrival time of each message to measure the distance to each satellite, from which it determines the position of the receiver (conceptually the intersection of spheres - see trilateration) The resulting coordinates are converted to more user-friendly forms such as latitude and longitude, or location on a map, then displayed to the user.

It might seem that three satellites would be enough to solve for a position, since space has three dimensions. However, a three satellite solution requires the time be known to a nanosecond or so, far better than any non-laboratory clock can provide. Using four or more satellites allows the receiver to solve for time as well as geographical position, eliminating the need for a super accurate clock. In other words, the receiver uses four measurements to solve for four variables: x , y , z , and t . While many GPS applications have no particular use for this (very accurate) time, it is used in some GPS applications such as time transfer, and it is the only variable of interest in some applications, such as traffic signal timing.

V.MIT APP INVENTOR OVERVIEW

The MIT App Inventor user interface includes two main editors: the design editor and the blocks editor. The design editor, or designer (see Fig. 5.8), is a drag and drop interface to lay out the elements of the application's user interface (UI). The blocks editor (see Fig. 5.9) is an environment in which app inventors can visually lay out the logic of their apps using color-coded blocks that snap together like puzzle pieces to describe the program. To aid in development and testing, App Inventor provides a mobile app called the App Inventor Companion (or just "the Companion") that developers can use to test and adjust the behaviour of their apps in real time. In this way, anyone can quickly build a mobile app and immediately begin to iterate and test MIT App Inventor

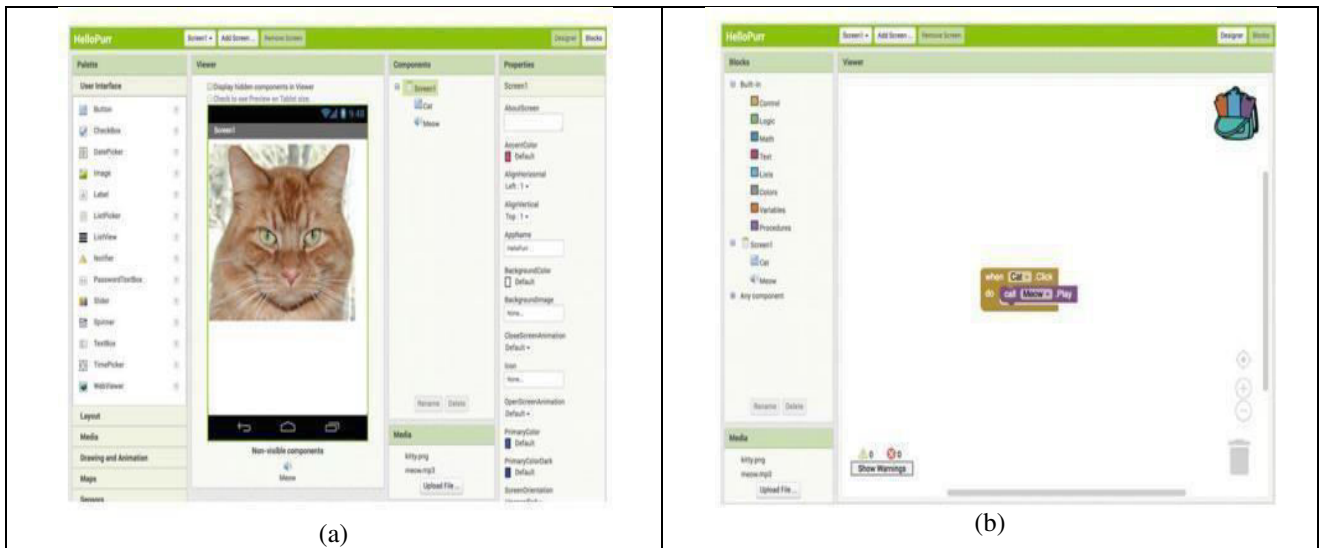


Fig.3. Images of MIT APP Inventor

VI.RESULTS

This project presents smart way of monitoring and alerting peoples during accidents. The result shows that higher sensitivity and accuracy is indeed achieved using this project. This made the project more user friendly and reliable. The proposed method is verified to be highly beneficial for the drivers in society. This application provides the optimum solution to poor safety facilities provided to the peoples in the most feasible way. So this model is the module approach for people safety applicable both for new models or preexisted vehicles. In all cases, our technology successfully detected all the sorts for the danger. The focus of our future research with is improved diagnostic resolution in order to support the module to bring it to a range to facilitate the user. Future safety system is going to be increasingly susceptible to no over loading. The impact of this module is likely to be essential. The goals of the module will be fulfilled with the increase in the technology.

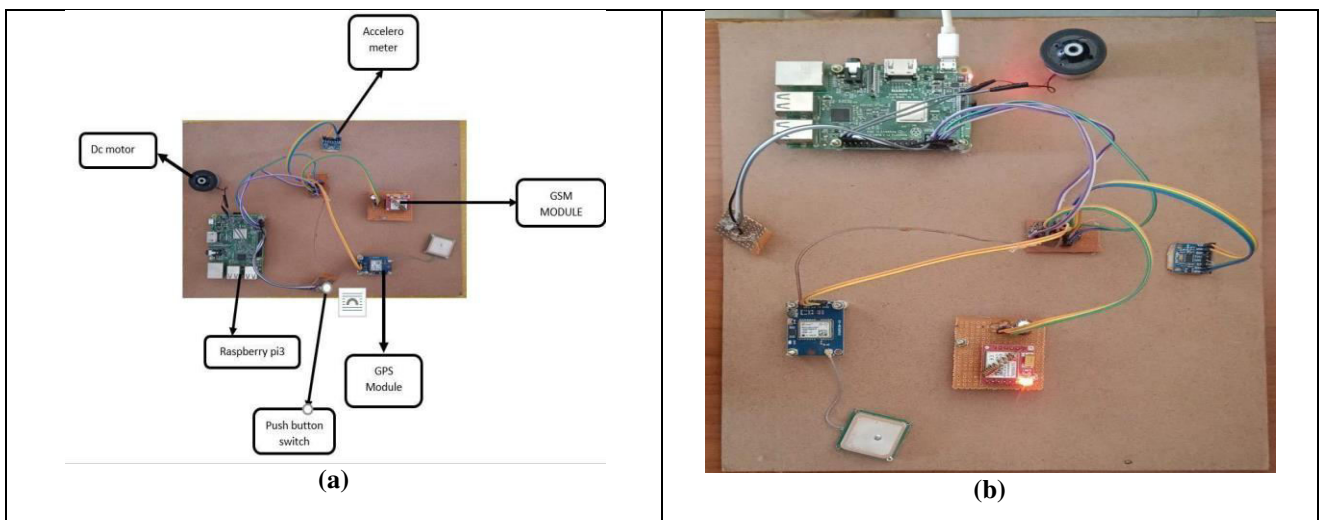


Fig.4.(a).System witout power supply (b) System with power supply



After giving supply to the kit/module when any accident occurs the accelerometer sensor detects the vibration and motion of the vehicle and sends signals to raspberry pi and shows the message of the accident detected is shown in Fig.6.3.

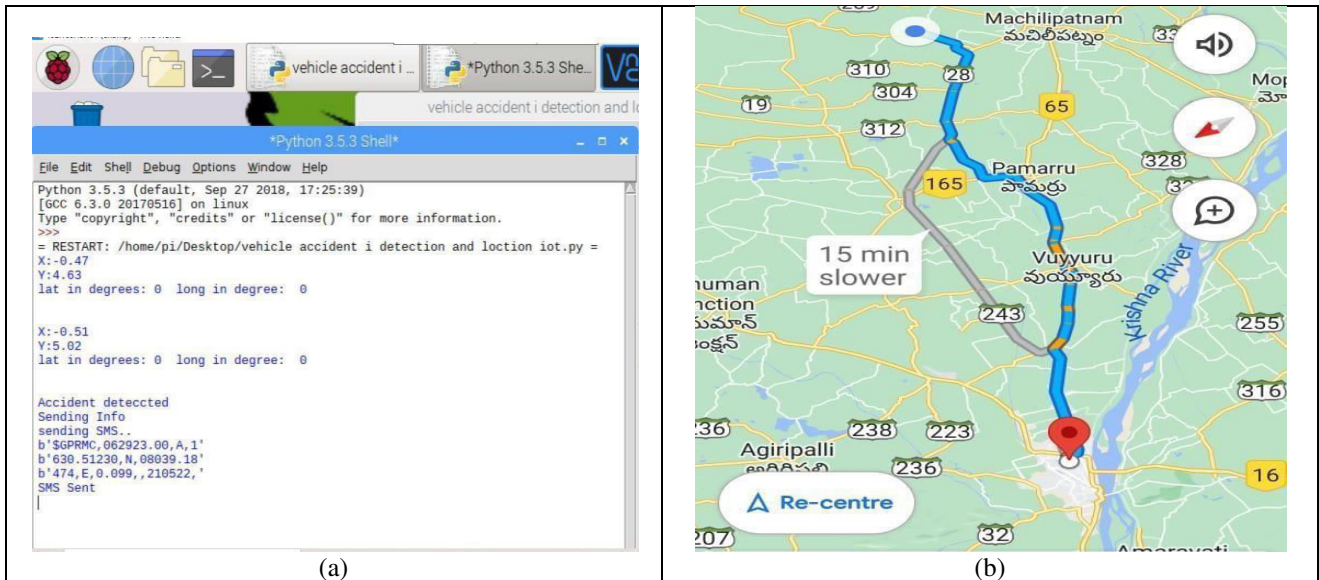


Fig. 5 Accident detection locations

If any vibration sensed by the accelerometer sensor and it is minor accident then we can stop the sending message by pressing the push button switch and it sends the signal to raspberry pi then message sending is cancelled and it is shown Fig.5.

VII.CONCLUSIONS

Rapidly increasing population, urbanization and increase of vehicles have made increase in Accidents. Accident detection and tracking of vehicles system provided solutions to the people those who have vehicles. This system could read and transmit the weight data to the server. Finally ,the result obtained from the tasks carried out shows that the system is capable of sending SMS alerts. And this project is to avoid human injuries during Road accidents and this system can be used for every vehicle like two wheelers, three wheelers four wheelers etc,..The server can communicate with the user by sending location .And give a alert message when Accident occurs .It is very useful for human life .And it also reduces the road accidents and we can save peoples life.

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