International Journal of Future Generation Communication and Networking
Vol. 14, No. 1, (2021), pp. 2798–2802

Warning System for Drivers using Raspberry Pi

Shabina. G. Sayyed[1*,]
Computer Science and Engineering Department
Karmaveer Bhaurao Patil College of Engineering,
Satara.
Satara, Maharashtra, India.
Email: shabina.sayyad@kbpcoes.edu.in

Sharayu Gajanan Barge
Computer Science and Engineering Department Karmaveer Bhaurao Patil College of Engineering, Satara, Maharashtra, India
Email: bargesharayu88@gmail.com

Sayali Sunil Kirdat
Computer Science and Engineering Department Karmaveer Bhaurao Patil College of Engineering, Satara, Maharashtra, India
Email: skirdat1998@gmail.com

Sandip Baban Jadhav
Computer Science and Engineering Department Karmaveer Bhaurao Patil College of Engineering, Satara, Maharashtra, India
Email:sandipjadhav746@gmail.com

Nikhil Pravin Vedpathak
Computer Science and Engineering Department Karmaveer Bhaurao Patil College of Engineering, Satara, Maharashtra, India
Email:nikhilvedpathak32@gmail.com

Shubham Dilip Shinde
Computer Science and Engineering Department
Karmaveer Bhaurao Patil College of Engineering,
Satara, Maharashtra, India
Email: shubhamshinde093@gmail.com

Abstract

Nowadays the countless accidents are occurring due to many reasons. But most of them the reason is the Over speed. For avoiding road accidents to develop a new module.
The aim is the safety of drivers utilizing the Internet of things (IoT). They can use GPS tracking the location and check there is a residential area / school/temple are there then check their speed when speed is over the limit they convey message. Furthermore, the ultrasonic sensor checks the objects are near or not and the temperature sensor checks the Engine temperature then gives a message.

Keywords- Internet of things (IoT), Raspberry pi, Python, GPS Ublox Neo 6m, Ultrasonic sensor, Temperature sensor

Introduction-

Warning System is part of the active safety systems that interact much more with drivers to help them avoid traffic accidents, indeed, its goal is to contribute to

ISSN: 223-7857 IJFGCN

the reduction of traffic accidents, by adopting new technologies; that is, incorporating new systems
for increasing vehicle security, and at the same time, decreasing the desperate situation that may arise during driving, due to human errors.

India accounts for the most considerable number of dates in the world, according to the Geneva-based International Road Federation(IRF).[2] The position in respect of road accidents, numbers reduced and injured in the last five years is given in the Table. [1]

Year	Total Number of Road Accidents (in numbers)	% change	Total Number of Persons Killed (in numbers)	% change	Total Number of Persons Injured (in numbers)	% change
2015	5,01,423		1,46,133		5,00,279	
2016	4,80,652	-4.14	1,50,785	3.18	4,94,624	-1.13
2017	4,64,910	-3.28	1,47,913	-1.90	4,70,975	-4.78
2018	4,67,044	0.46	1,51,417	2.37	4,69,418	-0.33
2019	4,49,002	-3.86	1,51,113	-0.20	4,51,361	-3.85

From the given table road, accidents will be the increased. The project domain is are mainly two parts cloud and IoT.

IoT-

The execution of the project will simultaneously remain three parts. There is the ultrasonic sensor, GPS, and temperature sensor.
Ultrasonic sensors check the within 1m not any object otherwise that will be inform the Driver. GPS firstly checks the location is residential area/school/temple etc. and second checks the speed of the vehicle if speed is high out of limit then alert to the driver. Temperature sensors check the temperature of the Engine they can be out of the limit then alert the driver.

Existing Systems:-

Vehicle Security System using Motion System:-

A lot of advancements in science and technology have been observed last decade. Children used to play in cars and by mistake, they lock themselves in the car. As the parents were unaware of this, children face the problem of suffocation which may lead to their death. This concept is developed to avoid this kind of disaster by using advanced technology such as motion sensors. When the sensor detects any abnormal motion in the vehicle, the oxygen is supplied inside the vehicle through oxygen cylinders.

Intelligent Safety Warning and Alert System for Car Driving:

At the point when it transformed into the 20th century different sorts of vehicles have acquainted with give comfort in human day by day life and the improvements of new advancements make the vehicle running quick and speeding up without any problem. It, in actuality, acquires a few issues, for example, the happenings of mishaps because of driver's weariness after a long excursion of movement, the lack of parking spots, the terrible perceivability around evening time or the driving in weighty downpour days,

ISSN: 223-7857 IJFGCN

and so forth The mishaps once in a while get the casualty of living souls and loss of properties, in this way numerous actions to implement safe driving and the advancement of models to screen driver's practices have been proposed and acquired many promising outcomes. An examination directed by Mercedes Benz re-ports that in the event that it can get an extra 0.5 seconds in the notice time frame it will stay away from 60% of the overwhelm mishaps and it will arrive at 90% if 1.5 seconds is added into the notice time frame.

Intelligent Night Vision System (INVS):-

In driving around evening time or in substantial downpour, the driver's noticeable reach will be confined, and furthermore the light enlightening territory will be restricted to keep the driver from unmistakably seeing any common along the side of the road or the individual is in fixing his in a bad way vehicle the INVS will dis-play the front street condition on the LCD screen of the vehicle sound framework by utilizing the infrared camera to screen the street condition to present to the driver a total information on the front street condition to extraordinarily lessen the potential events of mishaps.

Video Parking Assist System:-

This framework utilizes a camera framework to separate the pictures of the vehicle toward the back and side headings and in its organizing with the impact aversion radar framework and the powerful helper straight framework to educate the driver regarding the wheel pivot course and point to help the driver to finish the turning around or leaving activity.

Proposed Work:

1. GPS tracking and a speed detecting module

In this GPS module, we predict the car location using the Ublox NEO-6M GPS module. It can track up to 22 satellites on 50 channels and achieves the industry's highest level of sensitivity i.e. -161 dB tracking while consuming only 45mA supply current. Unlike other **GPS modules**, it can do up to 5 location updates a second with 2.5m Horizontal position accuracy.[3]Once the user’s position has been determined, the GPS unit can calculate other information, such as speed, bearing, track, trip distance, distance to destination, sunrise and sunset time, and more. So by using the Ublox NEO-6M GPS module also it will detect the current speed of the car to avoid accidents because of the high speed of a vehicle. [6]After detecting the location it will check the residential area is there like school, college or hospitals near to car within 100 meters. If the car is in the residential area and its speed is more than 80 then the system will give an alert as a voice message to the driver.

2. Distance measure using ultrasonic sensor

Numerous mishaps at expressways are occurring because of the nearby running of vehicles, all of abrupt, on the off chance that the in front vehicle driver lessens the speed or applied breaks, it is very hard for the accompanying vehicle driver to control his vehicle, coming about mishap. To keep away from this sort of mishap, the notice framework , which contains caution and alarm by voice message can orchestrate at all sides of each vehicle. In this module, by utilizing the ultrasonic sensors we measure the item or another vehicle inside a distance of 1 meter. It produces ultrasound at 40 000 Hz which goes through the air and if there is an item or hindrance on its way It will ricochet back to the module. Considering the movement time and the speed of the sound you can compute the distance.[7] The circuit is planned to such an extent that at whatever point the if there is any vehicle close to our vehicle in the middle of set distances of 1 meter then rationale high sign is produced and it is taken care of to a microcontroller, on receipt of this sign, the regulator will actuate the ringer and caution to driver by enacting voice message and alert consequently.

ISSN: 223-7857 IJFGCN

3. Engine temperature Detection

In this module motor temperature of a vehicle will identify by utilizing a Temperature sensor. The proposed module in this undertaking focuses on consistently observing the constant temperature savvy path by setting fixed spans. [4] Here the observing hub is raspberry pi. The Sensor used here is the DS18B20 1-wire Temperature Sensor. This sensor arrives in a small three-pi bundle. The sensor is associated with the raspberry pi unit utilizing a jumper wire. [5] The raspberry pi unit can be utilized to store and show the constant temperature. The raspberry unit is customized utilizing python language. The base temperature level of a motor is set and in the event that the temperature will expand more than the base temperature, the driver gets ready by a bell. The square graph of the proposed technique is appeared in figure

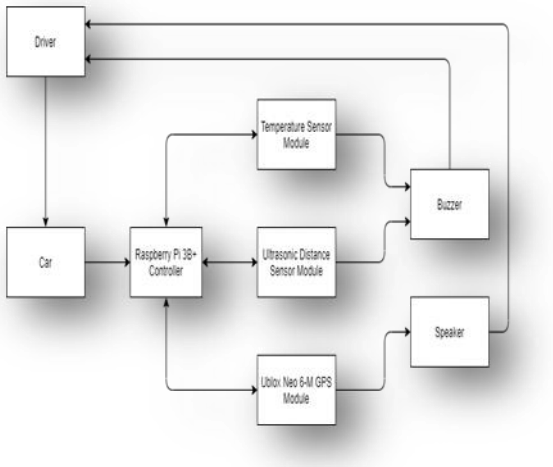

Fig Block Diagram

Advantages & Limitations: -

Advantages: -

- To improve safety and control speed to prevent accidents in a hospital, a school area.
- To improve car security driver safely and also other peoples safety.
- Temperature sensors maintain the Engine temperature and give alerts so it is very secure
- and prevents the car burning and save human beings life.

Limitations:-

- Power failure
- Network failure
- Hardware failure
- Limited space obstacle detecting

Future Scope:-

In the future, we can implement temperature detection in the car and automatically set the A/C temperature. In the future, we can implement air pressure detection in tires.

Conclusion:-

Speed is one of the most significant causes of an accident, so this project Warning System for Drivers provides facilities to drive a vehicle safely. Using the Ublox Neo 6-M GPS

ISSN: 223-7857 IJFGCN

module allows to detection of vehicle current location and track residential areas like schools/colleges, hospitals and detect the current speed limits are breached it gives the alert to a driver using voice message via a speaker. The ultrasonic distance sensor was able to discover the distance of a more limited range accurately and inform the driver if the vehicle is in danger of collisions. We designed and implement the engine temperature monitoring module which very useful for peoples who are disabled.

References:-

[1] Road accidents in India 2019, Ministry of Road Transport & Highways Transport Research wing(2019).

[2] https://www.google.com/amp/s/auto.economictimes.indiatimes.com/amp/news/industry/india-ranks-first-in-road-deaths-in-the-world/56221070

[3] https://lastminuteengineers.com/neo6m-gps-arduino-tutorial/Interface ublox NEO-6M GPS Module with Arduino

[4] USING RASPBERRY PI TO SENSE TEMPRATURE AND RELATIVE HUMIDITY Shah Vatsal1, Mehta Bhavin2 1Student,Dept. Of Mechanical Engineering, CHARUSAT, Changa, INDIA 2Assistant Professor, Dept. Of Mechanical Engineering, CHARUSAT, Changa, INDIA

[5] The Real Time Temperature Sensing using Raspberry PI/Ms.Christeena Joseph Assistant Professor (S.G) Department of Electronics and Communication Engineering Saveetha School of Engineering

[6] Wan Rahiman, An overview of development GPS navigation for autonomous car

[7] Distance Measurement using Ultrasonic Sensor and Arduino CH. Neeraja Soni1 , CH.Sarita2 , Shrikant Maheshwari3 , Basant kumar Sahu4 , Bhavishya Jain5 , Garima Shrivastava6 Student1, 2,3, 4, 5 , Assistant Profeesor6 YITM, Rajnandgaon, India

ISSN: 223-7857 IJFGCN