

ADVANCED VEHICLE SAFETY AND MONITORING SYSTEM

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Abstract— Smart vehicles are trending world-wide network connecting all the smart objects during travelling. Whenever those smart things being connected over to each other which are not only restricted vehicles. With consistently expanding urban populace and quickly growing urban areas, issues in regards to vehicle security has been expanding at an exponential rate. Hence, there is lack in vehicle monitoring and due to which road accidents has become a great problem in our day today life. This paper gives IoV (Internet of Vehicles) based activity administration answer for conquer the issue that is winning in our everyday life which will help in vehicle wellbeing and checking.

Keywords— GSM, GPS, VEHICLE SAFETY, IOT, VEHICLE MONITORING

I. INTRODUCTION

The new period of the Web of Things is driving the development of customary Vehicle Specially appointed Systems into the Internet of Vehicles (IoV). With the fast improvement of calculation and correspondence advances, IoV guarantees gigantic business intrigue and research esteem, along these lines pulling in an expansive number of organizations and specialists. With the headways in remote sensor systems, Internet of Vehicles (IoV) has indicated extraordinary potential in helping to ease movement blockage. In IoV, vehicles can without much of a stretch trade data with different vehicles and frameworks, subsequently, the advancement of IoV will extraordinarily enhance vehicles safety, advance green data utilization and profoundly affect numerous businesses

The main objective is to make a device for tracking the location of the person and detect if they have fallen down by accident. GPS can be used to get the exact location of the person. GSM communication can be used to send SMS to the parent or the caretaker with the location details. So internet connectivity is not needed for the device. The device will have the following components –

PIC Microcontroller, GPS module, GSM module, buzzer, ultrasonic sensors, tyre pressure sensor, switches.

The traditional solutions offered to this problem are periodic pollution checks, monitoring of vehicular speed through CCTV cameras and speed trackers. While being the obvious choices, these strategies do tend to fail when it comes to monitoring of a huge number of vehicles when collision occurs; the collision detection sensor detects and send the GPS location to the Police and Ambulance by GSM Module and the speed sensor is connected to the motor. If any vibration occur the vibration reduces the speed of the wheel or vibration is connected to the lock just because for the keyless entry (theft avoidance) will throw the message to the car owner. Through the gear transition is done whenever the owner of the vehicle crosses the over-speed limit in the high level gear mode automatically GPS location is sent to the traffic police and RTO through SMS.

II. LITERTURE SURVEY

Dynamic security highlights, similar to electronically monitored slowing mechanisms, footing control and electronic brake dissemination, are intended to keep away from a mishap. Inactive security highlights, as in-assembled disintegrate zones in the monolog body shell which distort in a head-on impact to ingest the vitality of the approaching vehicle, are being to ensure the driver and travellers inside the vehicle when a mishap happens notwithstanding the working of the different dynamic wellbeing frameworks. Airbags, side effect pillars in the entryways and collapsible

guiding segments are different cases of inactive security frameworks. [3]

The work done in this paper is an endeavour to outline a propel vehicle security framework that utilizes GPS and GSM framework to anticipate burglary and to decide the correct area of vehicle. Today robbery is going on the stopping or in some uncertain place. The wellbeing of the vehicle is astoundingly fundamental. The propel vehicle security framework is planned utilizing GPS and GSM innovation. The framework contains GPS module, GSM modem, Infrared sensors, 8051 microcontroller, transfer switch, paint shower and high voltage work. GPS framework track the present area of vehicle, there are two kinds of following utilized one is web based following and other is disconnected following. GSM framework is additionally introduced in the vehicle for sending the data to the client since GPS framework can just get the vehicle area data from satellites.[4]

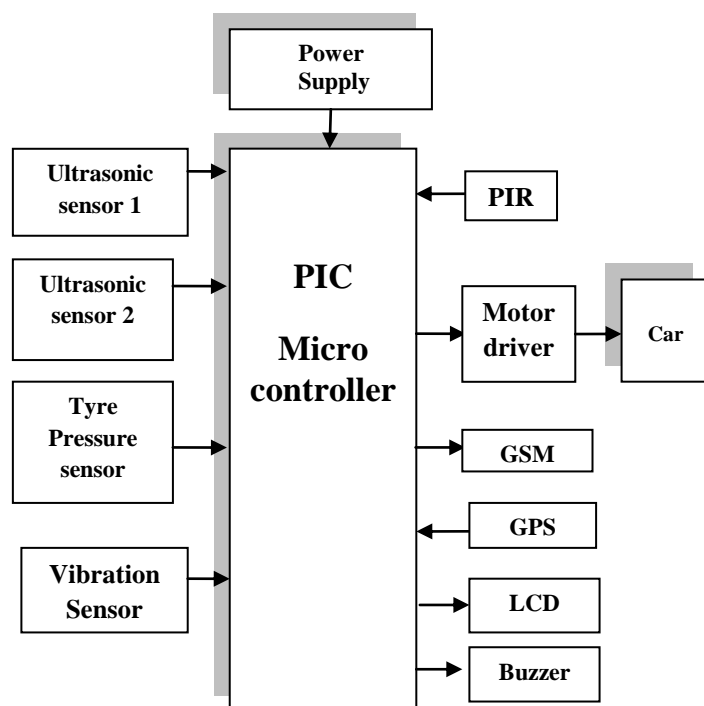
This paper provides the study of Integrated Safety Systems (ISS) like pre-crash frameworks with impact cautioning or independent vehicle activities. The Survey venture is specifically reacting to this by creating test and appraisal techniques for the assessment of pre-crash frameworks. Techniques are being produced for driver behavioural viewpoints, pre-crash detecting execution and crash execution under conditions impacted by pre-crash driver and vehicle activities. [9]

Smart vehicle associations with enhance Activity security is one of the most encouraging advantages of Vanet. The principle highlight of VANET is Correspondence between two vehicles for message trade by means of Vehicle to Vehicle (V2V) and Vehicle to Foundation (V2I) correspondence convention. VANETs are sorted by high versatility, quickly evolving convention, transient and one-time cooperation. The Goal of this paper is vehicles can openly

collaborate for bringing advantages of more prominent wellbeing and effectiveness. This correspondence can be utilized to evasion of vehicles crash, transmit data about activity. [11]

III. INTERNET OF VEHICLE BASED MANAGEMENT SYSTEM

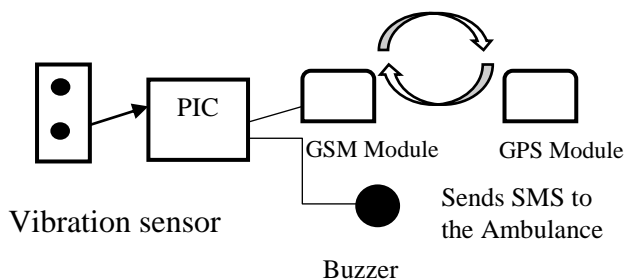
A. SYSTEM ARCHITECTURE



This is the system architecture of the proposed system. In this system, PIC microcontroller is used because it is fast, reliable and it takes less power consumption. Ultrasonic sensors are used for obstacle detection whether it is at rear or front end, it will detect and notify the car owner that you have to make a certain distance from the other vehicle. Tyre pressure sensors are used to detect the excess pressure on the tyre and notifies instantly to the driver. GSM is used for sending the location of the person via SMS. GPS is used here for sending the exact location of the person where the incident happened. [2]

B. IMPLIMENTATION

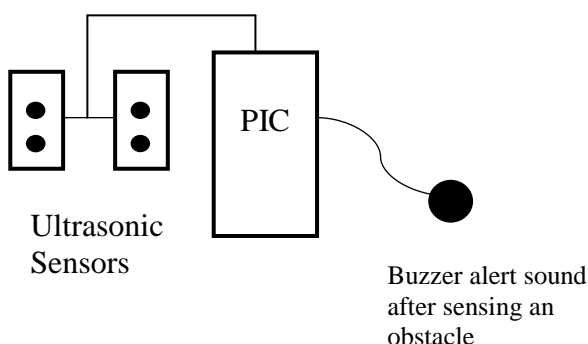
i) Vibration sensor



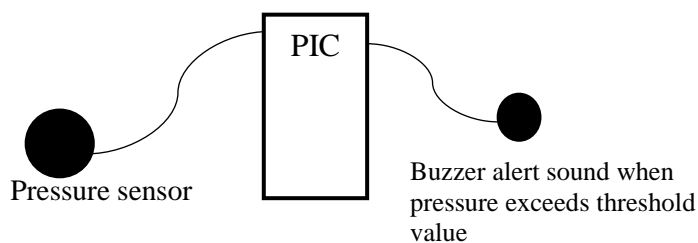
Vibration sensor is the main module of the system. It is used to measure and analyse the velocity or acceleration. In real time, when two vehicles collide with each other and if the frequency exceeds the threshold value then it will send the location of the vehicle where that accident happened. This works with the help of GSM module (Global System for Mobile Communication) connected with GPS module. [3]

ii) Ultrasonic sensors

These sensors are used to send the sound pulses of high-frequency and waits for the reflected sound wave. It is a device that is capable of measuring the distance to an object through sound waves. This sensor has one trigger point which detects the obstacle and another is echo which receives the waves reflected back from the obstacle.



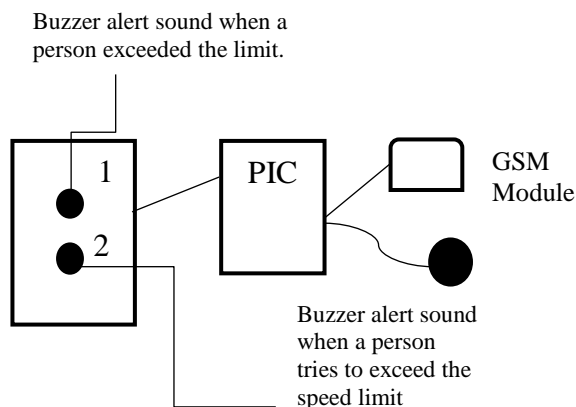
iii) Tyre pressure sensor



A weight sensor is a gadget outfitted with a weight delicate component that measures the weight of a gas or a fluid against a stomach made of stainless steel, silicon, and so on, and changes over the deliberate an incentive into an electrical flag as a yield. A weight sensor typically goes about as a transducer; it creates a flag as a component of the weight forced. For the motivations behind this article, such a flag is electrical. Weight sensors can likewise be utilized to in a roundabout way measure different factors, for example, liquid/gas stream, speed, water level, and height. [4]

This sensor is used for measuring the excess pressure on the vehicle. When it exceeds the threshold value, it will give the abnormality sound to the driver. The driver has to take an action regarding the issue extra pressure as it can be dangerous on road.

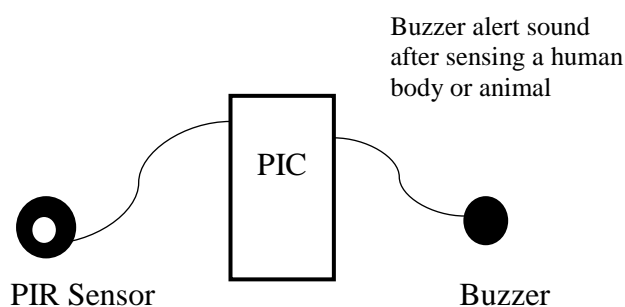
iv) Switch



In this module, it consists of two switches. First switch is for speed limit alert; whenever the driver tries to exceed the limit, switch will send the signal

to PIC controller and the buzzer will give the abnormality sound to the driver indicating that you are exceeding the permitted limit. The second switch here is for message sending functionality to the RTO specifying the vehicle details who violated the speed limit rule and a fine receipt will be issued to the person. By doing this people will not try to violate this rule. [5]

v) PIR sensor



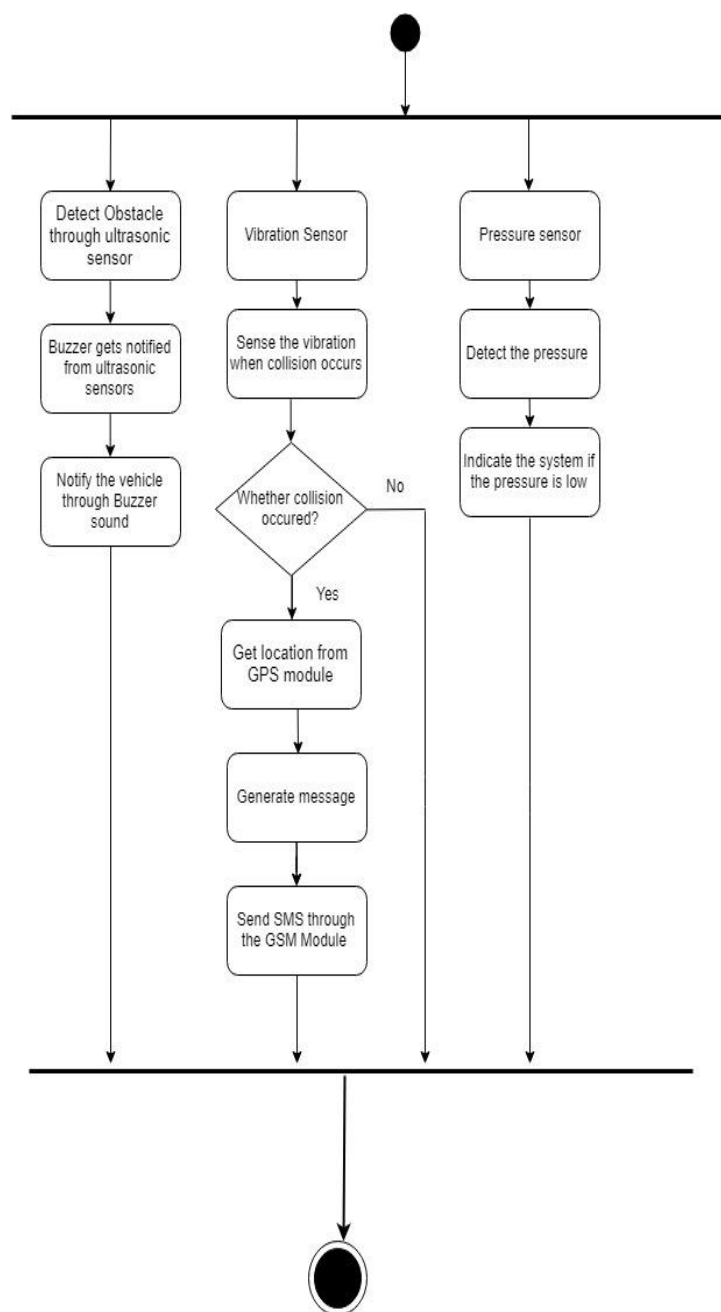
This module works for detecting the human body or animal through the heat as PIR sensors are capable of that, which helps the driver to know about the things moving around the vehicle. [6]

It gives the abnormality sound instantly whenever a person comes in front of the vehicle and the vehicle has to be stopped at that time or the driver can slow his speed whenever the car senses a person is coming in his way, in this way we can make sure of person's safety. [7]

This system consists of various kinds of sensors which are integrated with the microcontroller as multitasking work can be done with PIC controller. Two ultrasonic sensors are used in this system, one is for rear and second is for front end. By using two sensors, it will help in detecting the obstacle from both ends. After the detection, a buzzer will give the abnormality sound indicating that some obstacle is nearby your vehicle.

Vibration sensor measures with what impact the two vehicles have been struck with each other, if it exceeds the threshold value; then it will send the signal to the PIC controller and with help of GPS module, the exact location of the incident will be sent with the message service which will reduce the

critical situation the person who met with the accident.



C. RESULT

Hence, by integrating all the sensors with the microcontroller and when using it in real time scenario, this proposed system will benefit the people at large scale. Whether it is vehicle safety or

controlling and monitoring of different modules present in the system, it will be a great innovation in manufacturing industry of vehicles which will

D. CONCLUSIONS

In real life scenario, there are so many accidents that are happening just because of the driver's concentration lag and due to less time to react. This application helps to handle some of the controls in automatically without the need of human in it and traffic management. It ensures the vehicle safety and monitors many of the main controls of the vehicle which are necessary because of the rash driving that people are doing these days which can be dangerous and harmful to the pedestrians and other motor drivers.

IV. REFERENCES

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