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Drive-Tech: A Real Time Health Monitoring and Tracking System for Vehicles

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Abstract:

A Drive Tech is associate device put in in a every vehicle to alter the owner or a 3rd party to trace the vehicle's location. This paper projected to design a vehicle following system that works victimization GPS and GSM technology, which might be the most cost-effective supply of car following system. This style can unceasingly be dominant a moving Vehicle and report the standing of the Vehicle on demand.

It is associate embedded system that is employed for following and positioning of any vehicle by victimization GPS and GSM. A GSM electronic equipment is employed to send the position that Latitude and meridian of the vehicle from a foreign place. The GPS electronic equipment can unceasingly provide the info i.e. the latitude and meridian indicating the position of the vehicle. an equivalent information is distributed to the mobile at the opposite finish from wherever the position of the vehicle is demanded. once the request by user is distributed to the quantity at the GSM electronic equipment, the system mechanically sends a come message to it mobile indicating the position of the vehicle in terms of latitude and meridian in real time. OBD Device is especially designed to reduce emissions by perceptive the performance of most significant engine elements. to boot, one will access the knowledge through one's device like mobile, PC etc.

Keywords **—Drive Tech, Vehicle Tracking, GSM, GPS, OBD.**

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I. INTRODUCTION

The main aim of Drive Tech is to provide Security to all or any vehicles. Accident alert system main aim is to rescuing folks in accidents. this is often improved security systems for vehicles. This new technology, popularly referred to as vehicle following Systems that created several wonders within the security of the vehicle. This hardware is fitted on to the vehicle in such a fashion that it's not visible to anyone UN agency is within or outside of the vehicle. Thus, it's used as a born-again unit that unceasingly and sends the situation information to the watching unit. the most recent like GPS are extremely helpful future, this technique allows the owner to look at and track his vehicle and find out vehicle movement or gift activities and its past activities of car. the situation information from following system will be accustomed track the situation and may learn to police for any action. Some Vehicle following System will even find unauthorized movements of the vehicle and so alert the user. this offers a grip over alternative units of technology for an equivalent purpose. This accident alert system in it detects the accident and therefore the location of the accident occurred and sends GPS coordinates to the specified mobile, pc etc.

OBD is associate automotive term victimization to a vehicle's self-diagnostic and reportage capability. OBD systems provide the vehicle owner or repair technician access to the standing of the assorted vehicle subsystems. the quantity of diagnostic information accessible via OBD has varied wide since its introduction within the early Eighties versions of on-board vehicle computers. trendy OBD implementations use a uniform digital time information additionally to as standardized series of diagnostic hassle codes (DTCs) which permit one to chop-chop determine and malfunctions inside the vehicle. Early versions of OBD would merely illuminate a malfunction indicator lightweight or" cretin light" if a drag was detected however wouldn't give any information on the character of the matter. Accelerating forces engaged on the sensors when a collision will be as high as 100g (100 times the earth's attractive force force). once an automotive is stopped short by a control, all bodies or objects that aren't firmly fastened to the automotive can still move at the impact speed. The sensors live this acceleration and relay it to the management unit as usable data.

Literature Review

- **GPS Tracking: -**

The circuit is meant for tracking the situation of vehicles. Most of tracking systems are made by using GPS. This is often very simple and cheap. Tracking systems are mostly employed by fleet operators for tracking a vehicle location,this is often a really good method for preventing our vehicles from stolen. This tracking system sends us the geographical coordinates and by using these coordinates we will track our vehicle position on electronic maps using internet.

By using these tacking systems, we will share real time information about transportations and can also be share real time information or position of trains and buses with passengers. Means passengers can see the important time of arriving busses or trains at the platforms on LCD or on Mobiles. Here the system GSM module is employed for sending the coordinates of auto on mobile via message. GPS is sending the coordinates continuously in sort of string. After reading this string using Arduino extract the specified data from string then sends it to mobile using GSM module via SMS. Thisinformation is named latitude and longitude. GPS used 3 or 4 satellite for tracking the situation of any vehicle. In circuit diagram three main Components used. These are Global Positioning System (GPS), GSM Module and Arduino. GSM module's Rx pin is directly connected to TX pin of Arduino and TX pin of GPS is directly connected Rx pin of Arduino. And a 16X2 liquid display is additionally connected with Arduino for displaying coordinate.

Accidental Sensor: -

According to the planet accident report, India has the very highest number of road accidents within the planet. Road accidents have earned India a dubious distinction. With over 130,000 deaths annually, the country has overtaken China and now has the worst road traffic accident rate worldwide. As many as 1, 39, 091 people lost their lives in 4, 40,042 road accidents within the country last year. The statistics released by the National Crime Records Bureau (NCRB) 1, 18, 533 of the victims were male. They include 11,571 pedestrians. The 28 States together accounted for 1, 36, 771 deaths and therefore the seven Union Territories for the remaining. Tamil Nadu tops the list of with 16,175 deaths in 67,757 accidents, followed by Uttar Pradesh with 15,109 deaths in 24,478 accidents. Andhra Pradesh is third with 14,966 deaths in 39,344 accidents and Maharashtra fourth with 13,936 deaths in 45,247 accidents. The Capital city of Delhi accounts for about 1,866 deaths in 6,937 accidents. The states in India like Tamil Nadu, Uttar Pradesh and Andhra Pradesh accounted annually for 15.4 per cent, 10.3 per cent and 10.1 per cent of the road accidents within the country.

Vehicle Care: -

A real-time evaluation system is employed for rapid condition screening and to supply reliable information about the vehicle conditions. The real-time evaluation system also can be called as Vehicle Health Monitoring System. The system uses HMI display in order that the reports and

therefore the alerts are often displayed thereon and feedback from the user are often done employing a touch response. The system model being developed may be a standalone on-board model which can be a recorder for outdoor world. The vehicle health monitoring is one among the applications of IOT. The vehicle health is often monitored automatically with the assistance of sensing devices and therefore the lifetime of the vehicle is analysed. The report often is sent to authorize service centre through a wireless communication.

Finding: -

We are not sure that we will have a safe travel to reach our destination-even a small distraction may bid to an accident.Drowsiness have larger role in accidents. Most of the accidents occurs due to driven inattentionsince they don't have a way to get alert.

- According to the national crime record, India bears nearly 30 percent of the world's total accidentrates.
- Safety.
- Get live location of your vehicle on your phone by just sending a simple text. You'll get thecoordinates on your mobile.
- Reduce cost of maintenance
- Even if an accident occurs you will be notified with the location of the vehicle.
- Availability through better maintenance scheduling
- Reliability

Objectives of the Project: -

- Real time car tracking can be done using the Arduino board and GPS sensor.
- Fuel tracking can be done with Arduino and if the fuel is getting low the driver is alerted.
- If speed is exceeding a limit the car care unit will alert the driver.
- Total vehicle usage can be monitored.
- Car leasing can be done due to car tracking system.
- Live tracking of the vehicle with the help of an Android App.
- Ultrasonic Sensor warns the driver when there are obstacles in between.
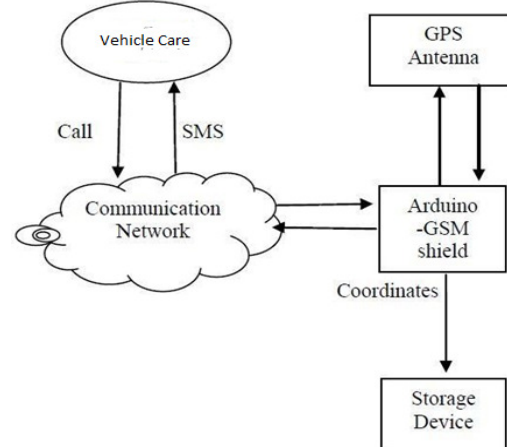
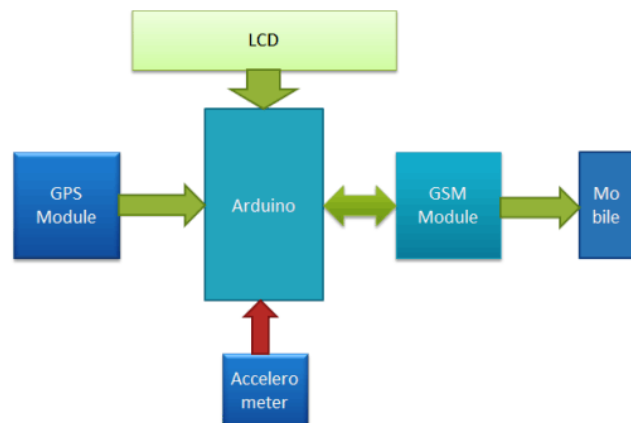**System Architecture and block Diagram: -**

Fig System Architecture

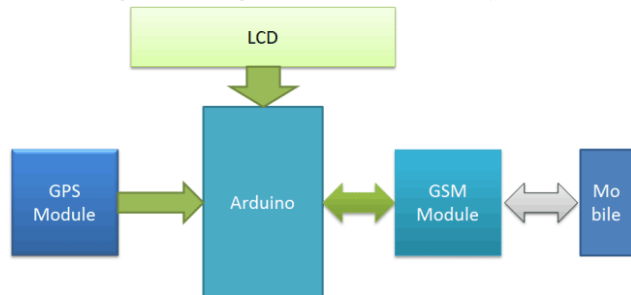**Fig Block diagram of accident alert system**

Fig Block diagram for vehicle tracking

Components Used: -

Arduino IDE: - The Arduino integrated development surroundings (IDE) may well be a cross platform application that is written inside the artificial language Java. it's accustomed write and

transfer programs to Arduino compatible boards, but also, with the help of third-party cores, different businessperson development boards. The code document for the IDE is discharged beneath the antelope General Public License, version. The Arduino IDE supports the languages C and C++ victimization special rules of code structuring.

Android Studio: - mechanism Studio is that the official IDE for Google's mechanism code, built on JetBrains' IntelliJ arrange code and designed specifically for mechanism development. It's on the marketplace for transfer on Windows, macOS and UNIX system operating systems} primarily based operating systems.

Arduino Board: - Arduino is associate code document physics platform supported easy-to-use hardware and code. Arduino boards can browse inputs - light-weight on a tool, a finger on a button, or a Twitter message - and switch it into associate output - activating a motor, turning on associateLED, publication one factor on-line.
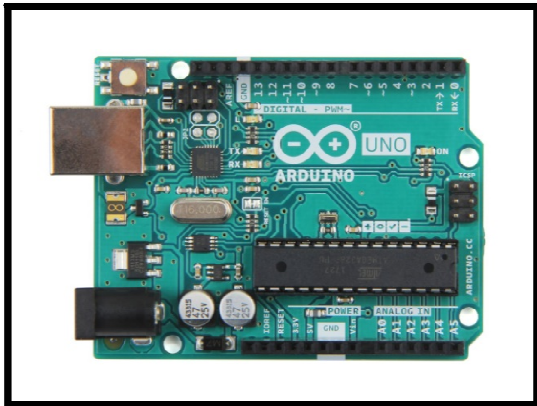

Fig Arduino Uno board

GPS trailing Unit: - a world Positioning System trailing unit may well be a navigation device unremarkably carried by a moving vehicle or one who uses the GPS to trace the device's movements its location. The recorded location information can either be unbroken at intervals the trailing unit or transmitted to associate.

Crash Sensor: - Crash sensors ought to be compelled to find a collision and convert it to usable signals at intervals milliseconds. The quick forces working on the sensors once a collision is as high as 100g (100 times the earth's force force).

once an automobile is stopped dead by a bearing, all bodies or objects that are not firmly fixed to the auto will still move at the impact speed. The sensors live this acceleration and relay it to the management unit as usabledata.

LCD Display: - LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. A 16x2 LCD means it can display 16 characters per line and there are 2 such lines.

Fig LCD Display used in the project

Pros of the Project
So, till now we have seen all the uses of the project lets discuss the pros of the project
- Real time location tracking can be done with the help of tracking sensor.
- IOT based project is the need of the hour to have safe mobility.
- Can display live vehicle health.
- Android app helps give information about the vehicle.
- Accidental sensor unit will send a message to the corresponding authorities in mishap.

Cons of the Project
As every coin has two sides as we discussed the pros of the project it's time to discuss the cons of the project.
- As the project is based on the Internet of things it does require constant net connectivity.

- As we all know all the project consist of all the electronic components it is very delicate to handle.

Features:
- Vehicle pursuit
- Vehicle Health
- Vehicle Maintenance
- Anti-Theft

Applications: -
- This project is an additional safety feature for your vehicle as it provides the details for the car in motion.
- It is a rescue project for the passenger who has met with an accident.
- It provides the onboard data of the vehicle which makes maintaining the vehicle easy.

Conclusion: -
This paper presents efficient real time location tracking and accident rescue with the help of GPS and Arduino board. The whole project can be customised as per the requirement of the user with the help of GPS and GSM. The combination of GPS and GSM helps to provide the accurate location of the modules and gives the accurate data. To trace the location, we can use google maps. Arduino here is the brain of the whole system. In this case, vehicle tracking can be done based on the latitude and longitude co-ordinates given by the system. For the future work number of other sensors and actuators can be added to the system.

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