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# Review on Accident Detection and Fuel Monitoring System

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***Abstract***

*In today's world, actual record of fuel filled and fuel consumption in vehicles is not maintained. It results in making the fuel tanks empty. To avoid this we are implementing a microcontroller based fuel monitoring and vehicle tracking system. We have used the reed switch which works according to the principle of Hall Effect for sensing the amount of fuel filled in the vehicle and amount of fuel consumed. Then this record is stored in the system memory. This system stores the record for several logs. We have used a microcontroller for our system. Also we have used the GPS technology to track the vehicle.*

*With the rapid development of society, there are some pitfalls including the increasing number of vehicle accidents. On average one out of every four motor vehicle accidents results in some type of injury. Traffic accidents are one of the leading causes of decease of life in most of the countries. As number of vehicle increases mean while the accident also increases. The government has taken number of actions and so many awareness program also contacted even though the accident increases as population increases. The accident alert system is designed using IOT and an android app. It is primarily developed to save lives of people in critical situations (or) in case of road accidents. The app is interconnected with sensors, which are connected in user's vehicle and responsible for detection of a fall down or accident event, and after they sends this information to the application which is pre-installed in the user's mobile. The application will send alert SMS or voice message regarding accident and its location to emergency contacts (Family members) and Emergency Medical Services automatically. The user needs to register his details while installing it and can add his desired contacts, to which the information needs to be passed. It may take 2-3 min of time to send this message. The message would also contain the location along with time. This would help save precious time in situations where an immediate action for the event has to take place in saving the life of dear ones.*

## INTRODUCTION

Fuel management system will work on the basis of the availability of fuel in tank of the vehicle. The threshold value is set if vehicle remaining less amount of fuel which will take the vehicle 5 km ahead, it will alert the driver that the fuel might get empty soon. Hence the driver will get the details about the nearby petrol pumps and the LCD screen will also give directions towards the petrol pumps. This will help the drivers to avoid situations like getting stuck at the middle of the road because of empty fuel tank.
Now a days there are many decease of life because of the Road Accidents. As it was proven by previous researches. The consequences of traffic accidents regarding the injuries of those affected is strongly depending on the response time of the emergency services. The time that take place between the occurrence of the accident and the arrival of services to the site, and also on the level of informed status of the emergency regarding the number and condition of the injured person. In Accident saving of the person is very important. But lack of services it cannot be possible. For providing that services to the person i.e. Family members and Hospital, Mobile phones have been present in our lives for over 20 years during which they have become indispensable due to the hardware and software
Characteristics of the smartphone, these devices are suitable to work as terminals for accident reporting system implement the Accidental System Application. Proposed system presents an IOT device connected with an application, a lightweight, flexible and power-efficient smartphone based vehicle to infrastructure communication system for improving road safety and enhancing the driving experience. This system uses the GPS to notify motor vehicle drivers about events that may be encountered while driving, this application will alert users if there is any accident happen on road. If the Accident happen then Emergency service will be available to the accident place but if there is no accident then user can

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decline the notification message. Using accelerometer sensor, vibration sensor, velocity and speed of that particular vehicle will be calculated.

## LITERATURE SURVEY

Yen-Jen Chen et.,al developed a fuel consumption monitoring using FMS, [1] which has front end Vehicle Tracking System (VTS) and the back end Management Server (MS). VTS was established and installed into the vehicles, based on several well-known technologies, such as Mobile Telecommunications Technology of GPRS or 3G, Global Positioning System (GPS), and On-Board Diagnostics II (OBD-II). In addition, VTS was also connected with the Vehicle Electronic Control Unit (VECU) through the OBD-II inter-face.

Nitesh.K.A et.,al [2] came out with the design and implementation of digital fuel gauge which measures the accurate level of fuel adding, by fixing the pressure sensor below the Fuel tank, at any point of time it will continuously measures the level of fuel with the help of processor and displays the value in the digital numeric form in the display unit. Hence, the measured values and location of fuel added is sent to the owner mobile through GPS and GSM and vehicle owner is aware of the fuel consumption through SMS services.

In [3] an Automatic Vehicle Detection and Messaging System Using GPS (Global Positioning System) andju GSM (Global System for Mobile) Modems. AT89C52 microcontroller is used in the system. When the system is switched on, LED is ON indicating that power is supplied to the circuit. When the IR sensors that are used sense any obstacle, they send interrupt to Microcontroller. The GPS receives the location of the vehicle that met with an accident and gives information back. This information is sent to a mobile number as a message. This message is received using GSM modem present in the circuit. The message gives the information of longitude and latitude values. Using these values the position of the vehicle can be estimated.

An Android Application for Accident Detection and Notification. [4] This paper is given an overview on the existing eCall solutions for car accident detection. Sensors are utilized for crash sensing, for notification. eCall is an emergency call that can be generated either manually by passenger or automatically via activation of in-vehicle sensors when a serious accident detects. When system activated the in-vehicle eCall system act as the source, destination or router of information. The paper shows how smartphones in a wireless mobile sensor network can capture the streams of data provided by their accelerometers, compasses, and GPS sensors to provide a portable black box that detects traffic accidents and records data related to accident events, such as the G-forces (accelerations) experienced by the driver.

The Goal of the paper is to present the design and implementation of such a system, able to give a set of information from the user, information that is associated with the location information using a GPS Tracking system and creates and accident report. The paper gives the information about implementation of system, able to give a set of information from the user, information that associated with a location using a GPS tracking system and creates an accident report. The system sense the GPS coordinates of the person, display the coordinates on map and computes the shortest route to the accident site. Also, the system is automatic detect the accident when occurs. The paper focuses on mobile part of the system

The use of GPS and GSM has been provided in [Mrs. Swetha Bergonda ,Shruti, Sushmita, Savita Soma, 2017]. [5] This proposed system uses the IoT for vehicle accident detection and alarming the authorities regarding accidents, vehicle tracking using GPS Modem. In this project they have designed IoT based vehicle accident detection and tracking system using GPS Modem. Hence IoT can revolutionize the way the system interact and respond for the variety of applications especially in case of traffic control.



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The Author has used Raspberry pi. When the system is switched on, the LED will be ON indicating that power is supplied to the circuit. The vibration sensors that they are using in their project sense the obstacle, and then it sends interrupt to Raspberry Pi. The GPS receives the location of the vehicle that met with an accident and gives the information back. This information will be sent to a mobile number through a WhatsApp message. This message will be received using internet present in the circuit. The message will give the information of longitude and latitude values. Using these values the position of the vehicle can be estimated. Modem performs modulation during transmission and performs demodulation during reception.

Accident Detection and Ambulance Control using Intelligent Traffic Control System [6] describes a better traffic management system using Raspberry pi and RFID technology. The vehicle has a Raspberry pi controller fixed in it which is interfaced with sensors like gas sensors, temperature sensor and shock sensor. The sensors are fixed at a pre-determined value before accident. When an accident occurs the value of one of the sensor changes and a message to a pre-defined number (of the ambulance) is sent through GSM. The GPS module which is also interfaced with the controller also sends the location of the vehicle. When the message is received by the ambulance, a clear route has to be provided to the ambulance. The ambulance has a controller ARM which is interfaced with the RFID tag sends electromagnetic waves. When an ambulance reaches the traffic signal the RFID reader which is placed on the joints detect the electromagnetic waves of the tag. If the traffic signal is red, then the readers goes through the database in fraction of seconds and turn the red light green. And automatically in such condition the RFID on opposite joints turn the opposite signal red. This provides a clear route to the ambulance.

## CONCLUSION

This paper described the various approaches of fuel management system and automatic SMS system in case of emergency. This invention is much more useful for the accident occurred in desired places and those occurring at night time which manually goes unattended. The biggest advantage is, this device locate the accident spot accurately, realizing the automation of accident detection and messaging system. Also Fuel management helps the vehicle driver to locate nearby petrol pumps with the help of GPS system and it gives directions to the nearest petrol pumps on the LCD screen. This will be benefitial for the driver to avoid empty fuel tank.

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