

Vehicle Asset Tracking and Rash Driving Alert System

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Abstract

All around the world, a sizable percentage of traffic deaths take place every day. Two effective methods for reducing traffic fatalities include shorter response times from the time an accident occurs and the dispatch of initial emergency personnel. The incidence of automobile accidents has increased as technology and auto manufacture have advanced. Due to limited emergency facilities, the survival rate following an accident is quite low.

Many technologies have been developed around the world to make people's daily lives easier and better. All users can access Android, which is the newest and fastest-growing technology available today. End-user adoption has increased significantly during the past few years. Based on the most recent GPS technology, the effort gives the vehicle asset tracking and rash driving alert system.

Our plan would assist in locating an accident and identifying it, which would then be communicated to the rescue team and the rider's emergency contact.

Vehicle accident alert and detection system is provided by this project, and it delivers SMS messages to user specified mobile numbers. A GSM alert system and GPS tracking have been used to create an algorithm. The recommended Automobile Accident Detection System might send an SMS accident alert and automatically track geographic data. The suggested method is expected to have a significant positive impact on the automobile sector.

Keywords: Vehicle asset tracking, L293D Motor Driver, Microcontroller, Neo6GPS and ADXL335 Sensor

1. INTRODUCTION

Traffic accidents have become more common as technology and motor manufacture have advanced. Since there are inadequate emergency facilities, the survival rate following an accident is incredibly low. Our plan would assist in identifying and finding an accident, which would then be communicated to the rescue team and the rider's emergency contacts. Accident detection systems use car-built sensors to determine when an accident has occurred. These systems immediately dispatch emergency medical personnel to serious accidents. Rapid arrival of emergency personnel at the scene of an accident reduces mortality. So, the microcontroller IC, to which all the sensors are connected, is used in this project. Moreover, a collision is detected using an impact sensor. ADXL335 is used to determine the flip angle and acceleration. The location is determined using GPS and GSM technologies, which are also used to deliver alarm messages. The GPS is used to provide the exact location of the place where the accident has happened and this is given through the SMS to the registered mobile number. For providing this information we used GSM

technology with SIM card to send the SMS of the location and the current state of the car or accident. Motor driver is connected to drive the motor and it will give the alert to turn on and off the motor.

2. RELATED WORK

- 2.1 Traffic accidents have become more common as technology and motor manufacture have advanced. Since there are inadequate emergency facilities, the survival rate following an accident is incredibly low.
- 2.2 Vehicle asset tracking is a system used to monitor and manage vehicles in real-time, typically through the use of GPS (Global Positioning System) technology.
- 2.3 The primary goal is to track the location, status, and behavior of vehicles to improve efficiency, security, and productivity. Here's a breakdown of key aspects related to vehicle asset tracking:
- 2.4 By using the GPS system we can perform accurate tracking of vehicle locations. By installing GPS devices in vehicles, their positions can be continuously monitored, enabling businesses to track their assets' movements in real-time.

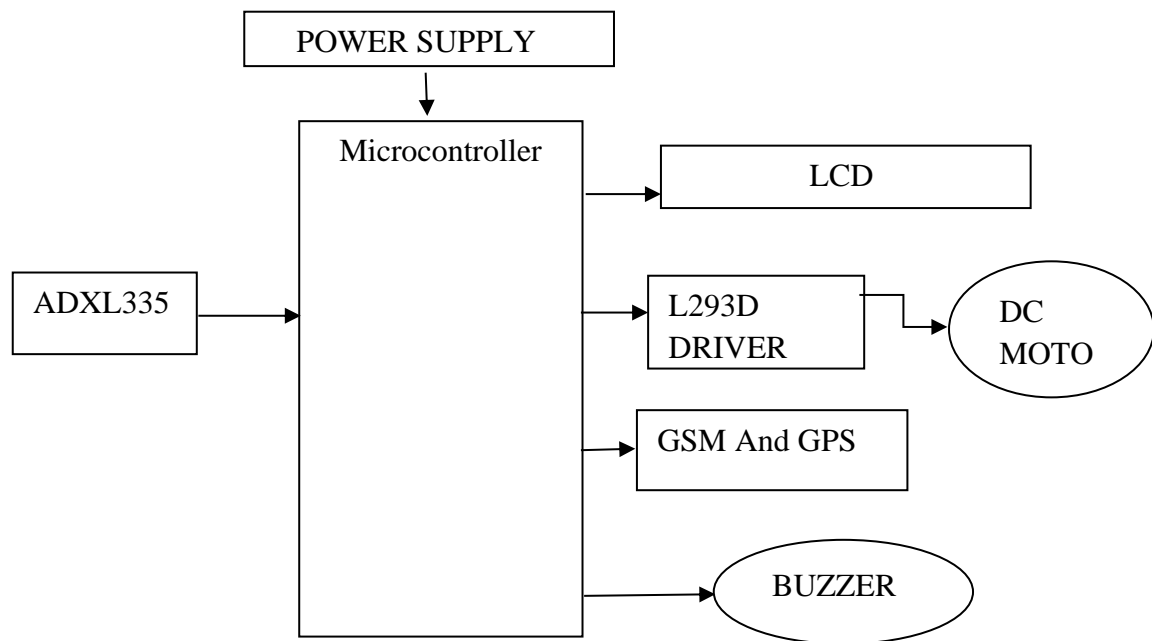


Fig. 3.1 Block diagram of Vehicle Asset Tracking and Rash Driving Alert System

3. HARDWARE PART

- 3.1 Microcontroller: Because of its affordability, portability, and compatibility with our project we selected Microcontroller as the primary piece of hardware for our project.
- 3.2 Neo6 GPS module: This module was chosen in order to track the bus's location in real time.
- 3.3 Power supply: The Microcontroller and GPS module were powered by a 5V/2.5A power source.
- 3.4 Buzzer : Buzzer is used to give indication of the accident.
- 3.5 GSM module: GSM module is used to send to SMS to registered mobile number.
- 3.6 LCD display : LCD display is used to display the process going on the project.
- 3.7 ADXL335 Sensor : This sensor is used to measure the angle with respect to gravity

4. SOFTWARE PART

4.1 Arduino IDE : This is used for programming Microcontroller board.

4.2 Eclipse IDE : Widely used for programming various microcontrollers

4.3 Testing : Testing a vehicle asset tracking system is crucial to ensure its reliability, accuracy, and effectiveness in real-world scenarios.

4.3.1 GPS : We check the accuracy of location tracking by comparing the GPS coordinates with the actual location of the vehicle.

4.3.2 Real time Tracking : Ensure that the system should provides real-time updates on the vehicle's location.

4.3.3 Alerts : alerts should be provided by the system's ability to generate report.

4.3.3 Scalability : Check how the system performs when tracking multiple vehicles simultaneously.

4.3.4 Response Time : Measure the time it takes for the system to generate alerts.

4.3.5 Compatibility : Ensure that the tracking system is compatible with all the vehicles.

4.4 Deployments

Deployments related to vehicle asset systems encompass a wide range of technologies and strategies aimed at managing and optimizing vehicle fleets. Here are several deployment examples:

4.4.1 Asset tracking system deployment: Asset tracking systems involve deploying GPS or RFID technology to track vehicles and their associated assets in real-time. These systems provide visibility into the location and status of vehicles, trailers, equipment, and cargo, helping organizations optimize asset utilization and enhance security

4.4.2 Vehicle Maintenance Management Deployment: Vehicle maintenance management system enables proactive maintenance planning and scheduling based on vehicle usage, mileage, and condition data. These systems help prevent breakdowns, extend vehicle lifespan, and ensure compliance with regulatory requirements.

4.4.3 Driver Safety solution deployment : Implementing driver safety solutions involves deploying technologies such as dashcams, driver behavior monitoring systems, and fatigue detection systems to improve driver safety and reduce the risk of accidents. These solutions often include real-time alerts and analytics to identify and address risky driving behaviors.

5. WORKING OF PROJECT

The output sensors is connected to the microcontroller and processed and given to the buzzer.

Here we are using 3 conditions:

1. In this condition we are manually sending the message to the nearer hospital and the registered mobile number.
2. In this condition we are using the IR sensor If any vehicle comes nearer to our vehicle then it will show as the accident has occurred and the message is sent to the nearer hospital and the registered mobile number.
3. In this condition we have used the ADXL335 which measures the X,Y and Z angle and if this angle gets changed then we will get notification as the accident has occurred and the message is sent to the nearer hospital and the registered mobile number.

In this we have used the GPS to show the location where the accident has occurred and it also mentioned in the SMS sent by the GSM.

6. CONCLUSION AND FUTURE WORK

Vehicle accident alert and detection system is provided by this project, and it delivers SMS messages to user specified mobile numbers. A GSM alert system and GPS tracking have been used to create an algorithm. The recommended Automobile Accident Detection System might send an SMS accident alert and automatically track geographic data. The suggested method is expected to have a significant positive impact on the automobile sector.

The proposed program deals with detecting incidents and warning paramedics to reach the specific location by taking them to the nearest hospital and providing the medical services to the person affected by the incident. This can be extended through providing the victim with medication at the spot of the accident. We can also avoid accidents by increasing the technology and using warning systems that could really stop the vehicle to conquer them.

7. REFERENCES

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