

Car Accident Alert System via GPS Assistance

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Abstract- In this review paper, we explore a technology that helps improve road safety and accident response by using GPS and sensors. Imagine a system that can automatically alert emergency services when a car is involved in an accident. That's what we are looking at. The idea of detecting car accidents is not new, and the automotive industry has made significant advancements in this technology. This paper aims to contribute to this field of technology. Here, we attempt to identify accidents using an Accelerometer, a device that helps us determine the vehicle's orientation. If the values of the x, y, and z parameters exceed predefined thresholds, it triggers an alert. When this happens, our code is executed to send notifications and SMS alerts. This system makes it easy to detect the location of an accident. If the system detects a significant impact, it sends the accident's location via GPS to emergency services for assistance. It promises to redefine road safety, offering a robust, automated, and efficient solution to save lives and reduce accident severity.

Keyword - Regulated Power Supply, Vibration sensor, ADXL 345 Accelerometer], Ultrasonic Sensor, GPS, GSM, Smart Phone, PIC Microcontroller.

I. INTRODUCTION

The Car Accident Alert System via GPS Assistant. This innovative system represents a significant leap forward in enhancing road safety and providing critical real-time assistance to motorists in the event of accidents or emergencies. The roads we travel on can be unpredictable, and accidents can happen in the blink of an eye, often leaving individuals in distress and in need of immediate aid. The Car Accident Alert System via GPS Assistant was developed with the primary objective of not only minimizing response times to accidents but also streamlining the emergency response process to save lives and reduce the severity of injuries.

Over the last few years, the automotive industry worldwide has shown considerable progress in its production. With the growing technology, rate of vehicle production is increasing and parallelly it can be concluded that the rate of accidents is also increasing. Road accidents leads to the high risk of people's life. This is because our country lacks the best emergency facilities. This paper proposes an automated detection and alerting system for automobile accidents. This system helps in detecting the accidents in very less period of time, basically within a few seconds, send the basic information to the first aid center in a message including the time and location of the accident. The alert message helps in locating the location so that the medical services can be provided on time and this way the precious lives can be saved. If in case there is no casualty and assistance is not required then you can terminate message sending process using the switch provided in the device. The message is transmitted via

the GSM module, and the location of the accident is identified using the GPS module. With the help of the Accelerometer sensor the accident can be precisely detected. The angle of the car's rolls over can also be known through the accelerometer via the message. This application provides in the most feasible way the optimal solution to the poor emergency facilities provided for road accidents.

II. HARDWARE IMPLEMENTATION

1. PIC Microcontroller Configuration:

Set up the PIC microcontroller to interact with the various modules. Configure I/O pins, serial communication, and power management.

2. GPS Integration:

Interface the GPS module with the PIC microcontroller using UART communication to obtain the vehicle's location data.

3. Accelerometer Integration:

Interface the accelerometer with the PIC microcontroller to monitor changes in acceleration. A sudden and significant change in acceleration could indicate an accident.

4. GSM Module Integration:

Configure the GSM module to send alert messages or make calls in case of an accident.

5. Power Supply Management:

Design a suitable power supply circuit to ensure continuous operation and efficient power management.

6. Sensor Integration (Optional):

If additional sensors are used, integrate and configure them accordingly.

7. System Logic:

Develop the software for the PIC microcontroller to analyze sensor data, detect accidents, and trigger alerts. Implement logic to interface when an accident has occurred.

8. User Interface (Optional):

Create a user interface, such as an LCD display, to show system status or real-time data. This can be helpful for debugging and system monitoring.

9. Testing and Calibration:

Thoroughly test the system under various conditions, including simulated accident scenarios. Calibrate sensors and algorithms to improve accuracy.

10. Data Logging (Optional):

Implement data logging to record accident information, including GPS location, time, and sensor data for later analysis.

11. Integration with Mobile App (Optional):

You can develop a mobile application to receive accident alerts and provide additional assistance.

12. Final Testing:

After ensuring that the system works correctly, conduct final testing in real-world conditions.

III. BLOCK DIAGRAM

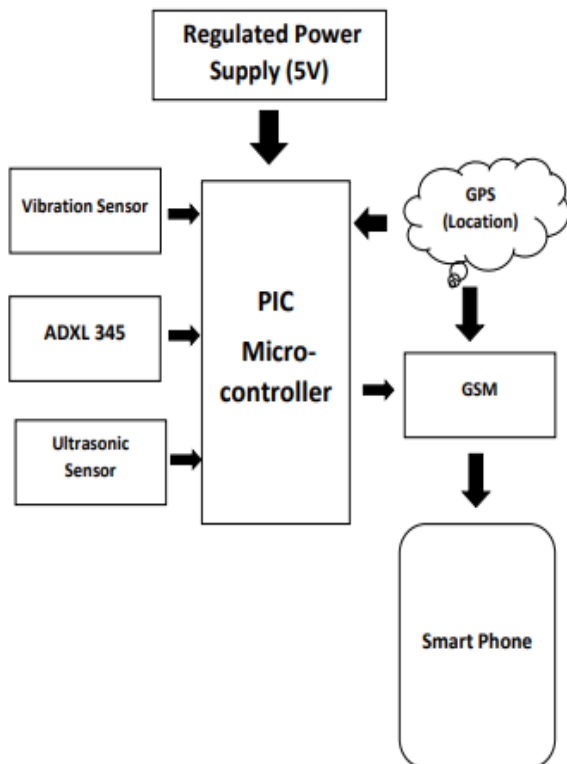


Fig.1 Block diagram for car accident alert system via GPS Assistance.

IV. FLOW CHART

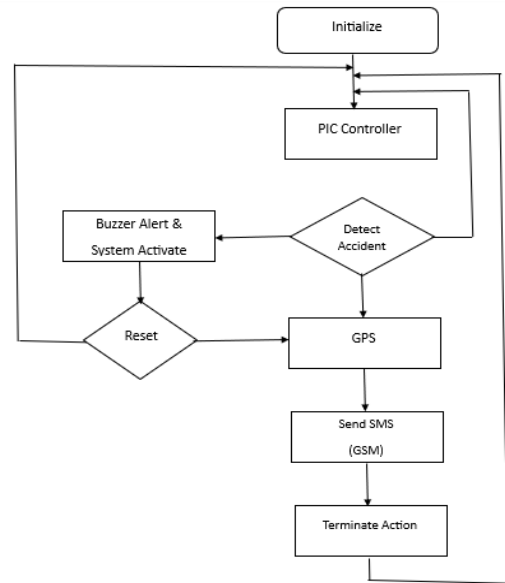


Fig.2 Flow Chart for Car Accident alert system via GPS Assistance.

V. CONCLUSION

The "Car Accident Alert System with GPS Assistance" project successfully demonstrated the feasibility of using PIC microcontrollers and GPS technology to create a potentially life-saving system. The project addressed an important societal issue by enhancing road safety and providing rapid response in the event of accidents. This technology has the potential to reduce emergency response times and save lives. The project team gained valuable experience in microcontroller-based system design, embedded systems, and wireless communication technologies.

VI. FUTURE SCOPE

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.

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