



An Approach towards Intelligent Accident Detection, Location Tracking and Notification System using GPS and GSM Technology

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To Cite this Article

K.L.M.Manasa and A.Rama Vasantha. An Approach towards Intelligent Accident Detection, Location Tracking and Notification System using GPS and GSM Technology. International Journal for Modern Trends in Science and Technology 2022, 8(06), pp. 355-357. <https://doi.org/10.46501/IJMTST0806061>

Article Info

Received: 18 May 2022; Accepted: 13 June 2022; Published: 17 June 2022.

ABSTRACT

Increasing traffic and reckless driving have resulted in an upsurge in highway accidents over the last several years. Families and emergency responders often have trouble getting up-to-date information about an accident in time for it to be of use to them. As a consequence, the person who has been injured will have to wait longer to get the treatment that they need. We're working on a GPS and GSM-based system for intelligent accident detection, location tracking, and alerting. It's aimed to solve these issues and to assist the person who has been in an accident and to save their life by sending a message to the rescue crew at the proper moment. Because of this, the number of individuals driving has grown as well. A lack of high-quality emergency services in our nation is to blame. As a result of the research presented here, an automated car accident alert system has been developed. With this design, an accident is detected in a fraction of the time it takes today, and vital information like location, time, and angle is sent to a nearby first aid facility almost instantly. Messages like this one are transmitted to the rescue squad in a short amount of time, which will aid in saving precious lives. When an accident happens, an alarm message is immediately sent to the rescue team and the police station. The GSM module transmits the message, while the GPS module pinpoints the site of the accident. Micro electro mechanical system sensors (MEMS sensors) and vibration sensors are used to detect an accident with high accuracy. Messages from the MEMS sensor might also provide the rollover angle of the vehicle. This software gives the best possible answer to the lack of emergency services for traffic accidents in the most practicable manner.

KEYWORDS: Arduino, GPS, GSM, Accident Detection, MEMS, 12V Power Supply.

1. INTRODUCTION

Security for all cars is the primary goal of a vehicle monitoring system. The primary goal of an accident warning system is to save the lives of accident victims. Vehicle safety has never been better thanks to these new technologies. Now that GPS technology has become widely available, owners may monitor and track their

vehicles, as well as learn about their vehicles' movements and previous actions. Vehicle Tracking Systems, as they are often known, are a relatively recent innovation that has had a significant impact on vehicle safety and security. When this gear is installed on the car, it is hidden from view by the vehicle's interior and exterior. In this way, it serves as a hidden device that

transmits the monitoring system's position information on a continuous or interruptible basis. Car tracking information may be used to locate a stolen vehicle and notify authorities of its whereabouts, if necessary. Detecting unlawful vehicle movements and alerting the owner are both features of certain vehicle monitoring systems. When compared to alternative technologies for the same purpose, this has significant advantages. Accident detection and location alerts are provided by this system, which transmits GPS, coordinates to a mobile phone, computer, or other device of your choosing when an accident occurs.

2. PROPOSED SYSTEM

An accident-prevention and identification system for automobiles has been developed in this proposed methodology. These designs rely heavily on the Arduino Controller, Accelerometer, GSM, and GPS modules. In order to determine the vehicle's location in relation to the ground, the accelerometer measures the vehicle's angle (x and y). The working condition of the engine is shown using a DC Geared Motor.. There is a signal sent to the Arduino Microcontroller if there is a change in vehicle angle in relation to the ground, which is detected by an accelerometer. Preventive measures include shutting off the engine (DC Motor) and generating a Buzzer Alert for adjacent individuals on the road, coupled with an Indicator LED, to alert them to the situation. Sends a Help SMS to the registered mobile numbers of family members in the event of a vehicle emergency. During a short circuit, a smoke sensor and a flame sensor are connected to this system to detect any potential for a flame. Send an SMS to the Registered Mobile Number

Step down transformer 230/12V is used to reduce the voltage to 12VAC in the system's power supply.. A bridge rectifier is used to convert it into DC. In order to provide the microcontroller and other components with the required voltage, a 7805 voltage regulator is employed. Use Filter Capacitors to reduce DC Voltages' jitter.

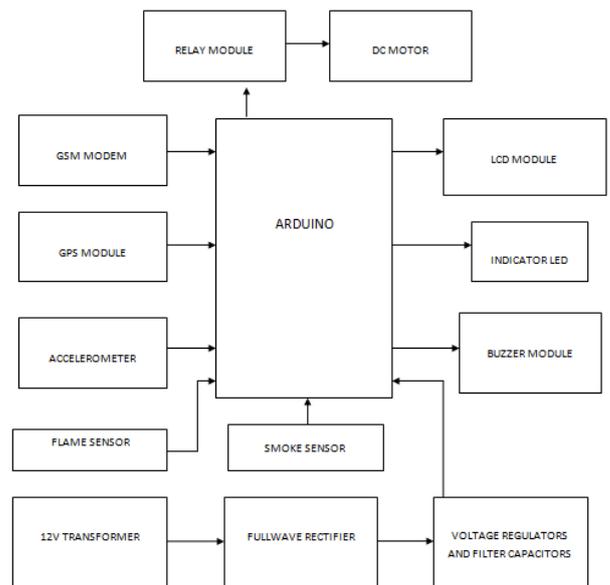
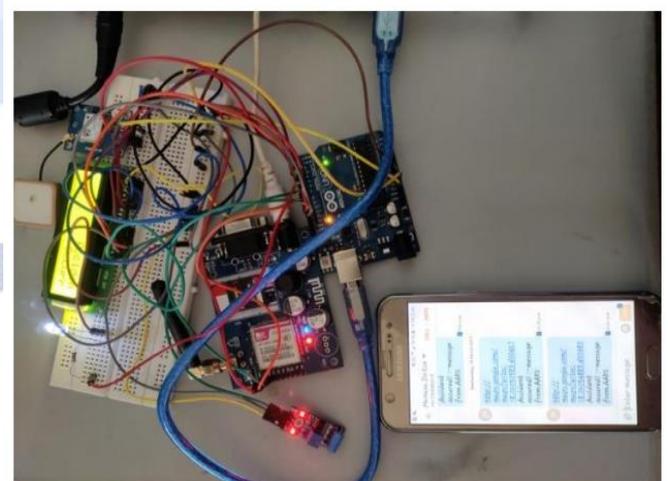
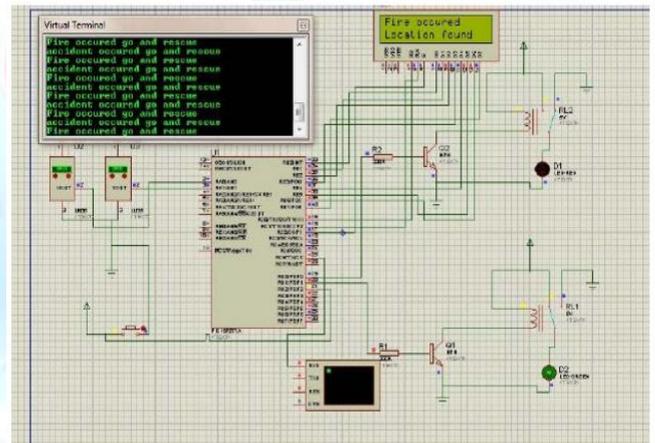
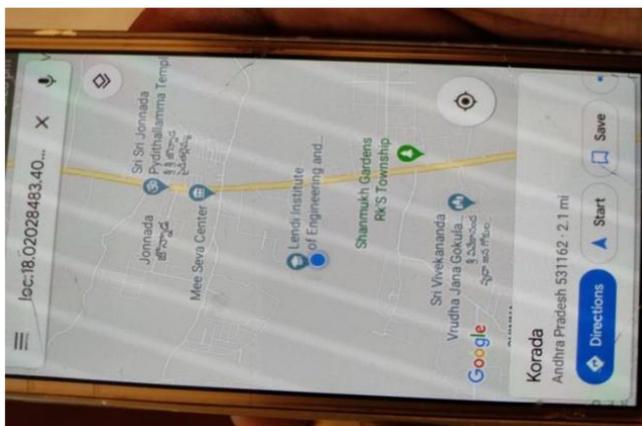


Figure1: Block Diagram of System

3. RESULTS





4. CONCLUSION

One of the best solutions is offered to design an intelligent system for automobiles that can monitor Accelerometer Coordinates in order to identify an accident and communicate a GPS location to the family members of the driver, as well as the ambulance. The use of this technique allows us to promptly summon aid in the event of an accident. A buzzer may also be used to inform others in the immediate vicinity. After a car accident, the engine is turned off. This system is additionally connected to a Smoke and Flame sensor in order to identify an accident that may be linked to this system.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

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