



Vehicle Theft Control and Accident Location Intimation Through SMS

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ABSTRACT

Human life is more valuable than anything else, timely help is more important than lending a helping hand. This project is one among those which is designed in a way to save human lives in a timely manner. In modern day vehicles, vehicle anti-theft system is of prime importance and traffic accidents are one of the leading causes of fatalities. An important indicator of survival rates after an accident is the time between the accident and when emergency medical personnel are dispatched to the accident location. By eliminating the time between when an accident occurs and when the first responders are dispatched to the scene decreases mortality rates, we can save lives. There are two main modules discussed in the project. In this project the first module is password based security system to access the vehicle. And the second one is accident location intimation through SMS by using GSM module.

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I. INTRODUCTION

In the present growing economy of India, the country also faces the uprising of crime rate. The offense has generated losses in properties, valuables and money. Car theft, which is the main concern for the conduct of this project, is one of the biggest crimes which is hard to eliminate. The person travelling can be tracked and also secured in the case of an emergency. On the other hand safety has also become a major factor that is to be taken care of which numbers of accidents have rapidly increased day by day, many lives are lost due to improper post accident signalling and tracing out the exact location. Our project provides solution for the above stated problems which involves intimating the authorised person in advance about the current status of the vehicle if it is being intruded by a unauthorized person or an accident using GSM and GPS based technology. In addition to it our project also includes the work of intimating the car dealers regarding any malfunction of the car with exact location. This project involves intimating the authorised person in advance about the current status of their vehicle. The ignition control over the vehicle is with the owner and when the vehicle is being intruded by a unauthorized person, a message is sent.

Post-accident signalling can be given in form of text message with the exact location using GPS and GSM based technology. Here the GSM is used in order to alert the prior person through a text message and the GPS is used to track the exact coordinates of the vehicle which is also included to the text message. Here the serial communication interface UART is used for the communication between the Microcontroller, GSM and GPS module. The RS232 communication standard is used for the Electrical signal characteristics such as voltage levels, to find signalling rate. The microcontroller that meets the requirements for the usage of serial data communication and Analog inputs is preferably the PIC 16F874A series, which provides good interrupt capabilities and reliability.

II. EXISTING SYSTEM

The number of cars is increasing rapidly and so is the number of car theft attempts. There are a lot of car security systems that had been produced lately, but the result is still disappointing as the number of cases still increases. The thieves are inventing cleverer and stronger stealing techniques that need more powerful security systems. Accident detection and trace of vehicle is the one of the useful project to the human beings in today's life. This project is mainly used for accident

detection and to trace the vehicle location by using GSM and GPS modules and to design and develop vehicle anti-theft system and vehicle monitoring and tracking by Messaging System Using GPS and GSM Modems and providing the security to the vehicle by using the password based module. In order to fully understand both GPS, GSM and vibration sensor technology, the study on how technology works is essential to complete the whole paper. The objectives of this paper are:

- To study and investigate the basic operation of the GPS, GSM module.
- To come with my own hardware of vehicle monitoring and GPS/GSM tracking system. To interface accident sensor and provide security to the vehicle from accidents.

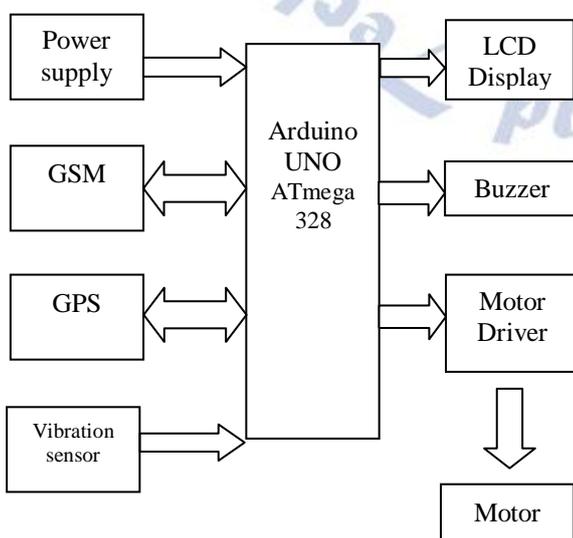
III. PROPOSED SYSTEM

Our proposed system consists of three modules (1) SMS Ignition Module: This is user defined module. When the car starts it sends the short message service (SMS) to the owner of the car, only if a reply is received the user is enabled to crank the car (2) Accident Alert Module: This module sends alert message to hospital or to the specified person when the car is met with an accident. Here the GSM is used to send the text message and the GPS is used to track the exact coordinates of the car. The serial communication interface UART is used for the communication between the Microcontroller, GSM and GPS module.

A. Main Components of the Project

- 1) Microcontroller based motherboard with regulated power supply.
- 2) GPS Receiver for Location Information.
- 3) GSM Modem/Mobile phone for remote communication.

IV. BLOCK DIAGRAM



Main Components Description

A. GSM Modem

Communication among vehicle, Owner, emergency is established accordingly as per requirement through GSM (Global Service for Mobile communication). A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone. A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection or it may be a mobile phone that provides GSM modem capabilities.

B. GPS Modem

Exact location on earth can be known GPS latitude, longitude information. Global Positioning System (GPS) is space based radio navigation System consisting of a constellation of Satellites and a network of stations used for monitoring and controlling. The GPS is operated and maintained by the Department of Defence (DOD). The GPS is a constellation of satellites in orbit around the Earth which transmit their positions in space as well as the precise period. It is receiver that collects data from the satellites and computes its location anywhere in the world based on information it gets from the satellites. Develop new microprocessor-based products and applications. The ARM is one of the major options available for embedded system developer.

C. Vibration Sensor:

It is a piezo electric material placed on the chassis of the car to sense the vibration produced during an accident. Accidents produce vibrations which are very huge and abnormal and are nearly equal to 9 G (G-Force against gravity). Once the threshold is crossed the sensor sends a signal to the PIC microcontroller which in turn triggers the GSM modem to shoot a sms containing the car number and location (GPS Coordinates) to the nearby hospitals/ambulance services.

D. Arduino

Arduino is an open-source prototyping platform based on easy-to-use hardware and software. Arduino boards are able to read inputs light on a sensor, a finger on a button, or a Twitter message and turn it into an output activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board.

To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE) based on Processing.

Arduino is

- Inexpensive
- Cross platform supported
- Simple and clear programming environment
- Open source and extensible software

Microcontroller ATmega328P

Operating Voltage 5V

Input Voltage (recommended) 7-12V

Input Voltage (limit) 6-20V

Digital I/O Pins 14 (of which 6 provide PWM output)

Analog Input Pins 6

DC Current per I/O Pin 20 mA

DC Current for 3.3V Pin 50 mA

Flash Memory 32 KB

SRAM 2 KB

EEPROM 1 KB

Clock Speed 16 MHz

V. WORKING

The main aim of this project is to prevent the vehicle from theft. To achieve this we are incorporating a security system which is password-based security. Initially the owner of the vehicle must set a password. The GSM modem was used to send and receive messages to the owner. The owner's mobile number was set fixed in the coding. To start the engine of the car one should enter the correct password. If anyone enters the wrong password, the owner will immediately receive the alert message. Theft prevention, we can also trace the car by just putting a message to the GSM modem. Then the GPS location of the car will be received by the owner by message. In this project we are using a GPS module to find the latitude and longitude of the present location, the output format of the GPS module is UART with a baud rate of 9600 bps. We are using two serial ports in this project. One is for the GSM modem and another one is for the GPS modem. If the vehicle met with an accident then immediately the engine will be off and the information message will be sent to the hospital immediately. The information along with the car location will be sent to the owner of the car. The coding was written in embedded C language using "ARDUINO UNO (IDE)".

VI. CONCLUSION AND FUTURE SCOPE

Thus our project Intelligent Car Safety System intimates the authorised person about the

current status of the vehicle and if it is being intruded by a third person or an accident using a GSM and GPS based technology.

We can also change the mobile number at any time. The alert message to the mobile phone can easily reach the remote location. Thus the system provides better safety of the car.

The implementation of automatic vehicle accident detection along with high-level authentication for anti-theft is done successfully. A Vehicle Positioning System is thus designed by using 'Arduino Uno' along with GPS, GSM, and an accident sensor. When the latitude and longitude values obtained are fed into Google Earth software, the location of the vehicle could be found out. Authentication is also provided so that only the authorized users can access the vehicle. A wide future scope guarantees that an enhancement to this system finds a great importance in a real-time system.

It could be used as a valuable tool for real-time traveller information, congestion monitoring, and system evaluation. The system can be used to quickly respond to unexpected accidents which occur on highways or busy roads in cities. This can be done by arranging these systems in various ambulances which cover the entire city so that the nearest ambulance could be contacted for help. It can be extended for alcohol detection. The system will detect the driving person whether the person is drunk or not; if the person is taken alcohol, the vehicle will not start. By using these types of applications, up to some consistent accidents can be reduced and many lives can be saved.

Our present security system consists of a user-defined SMS ignition module which will allow the driver to crank the car only after the acknowledgement from the owner. This feature can be improved by going for face recognition and identification of the person and then allowing the driver to crank.

REFERENCES

- [1] Zhang Wen, Jiang Meng "Design of Vehicle positioning System Based on ARM, Business Management and Electronic Information (BMEI), International Conference 2011 IEEE.
- [2] Peng Chen, "Shuang Liu, Intelligent Vehicle Tracking System Based on GPS, GSM and GIS", WASE International Conference on Information Engineering. 2010
- [3] Electronics For You Magazine, January 2008, pp. 135. "Method and system for automated

detection of mobile telephone usage by drivers”

Michael Rosen, Akron, OH (U.S).

- [4] <http://ijcsi.org/papers/IJCSI-10-4-2-164-174.Pdf>.
- [5] [http://www.ijarcce.com/upload/2014/ebruary/IJARCCCE 3H_ ssonika_Intelligent](http://www.ijarcce.com/upload/2014/ebruary/IJARCCCE%203H_ssonika_Intelligent).

