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Vehicle Theft Detection with Remote Engine Locking

P.Aswini [a],P.Madhuri [a], O.DivyaSree[a], Dr. J.Vinoth Kumar[b]

[a]UG Student, Department of ECE,SCSVMV Deemed University,Kanchipuram, Tamil Nadu 631561, India.
[b] Assistant Professor, Department of ECE,SCSVMV Deemed University,Kanchipuram, Tamil Nadu 631561, India.

A B S T R A C T

Communication cost, unlimited access of location and generating good feedback of a speedy progress etc, all today's widespread issues related to vehicles theft are increasing on a daily basis and affecting the society in many adverse ways. In past few decades stolen rate has been increased more. Accidental-problems, rape cases, transportation and vehicle stolen causes a major challenge to all. Almost all people have their own vehicles and want to secure domain for them. Raising awareness about this major challenge, we need to make an enable innovative idea implemented on anti-theft system. This system includes the existing technologies (GPS and GSM) which increase the security rate by providing information and location about vehicles in timely manner. The stolen activities of unauthorized person are firstly alert the message to real owner of vehicle through GSM which has an interaction with microcontroller (which provide monitoring to ignition system of vehicles). After finding alert notification, owner sends back a message to GSM which is again interact with microcontroller to deactivate the system. With instant messaging, lower communication cost, unlimited access of location and generating good feedback of a speedy progress etc, all the factors make it cost effective and efficient anti theft vehicle system .

Keywords: GPS, GSM, Location identification, Theft alert, vehicle tracking

1. Introduction

The vehicle theft is become a major problem that the entire world is facing now. The issue of vehicle theft has increased tremendously, mostly at parks. To stopping this issue, there is a need of theft alert system which helps to owner to ensure theft prevention and provide speedy identification of an unauthorized person who was trying to steal the vehicles. The theft alert system makes a use of GPS (Global Positioning System) and GSM (Global System for Mobile) which are embedded in vehicle to communicate with vehicle's owner mobile phone. In GSM technology, the communication established either by an SMS or calling but we prefer the communication via SMS (between GSM and owner's mobile phone). The communication established include – Sending of an SMS by GSM to owner's mobile phone to provide all information about vehicle and vice-versa. The GPS technology is used here to provide the exact location of target. It means that whenever any unauthorized person will try to steal our vehicles, then we can easily detect the location of theft with vehicle by using the application of GPS technology.

In this system we are going to use two keys to open the vehicle lock, one is the owner's key which is used by owner and other is direct key which is used by unauthorized person. Whenever the direct key is used, the alarm become active and give the beep sound which indicate that the thief is detected. At the same time a warning SMS is sent by GSM to registered mobile number.

After receiving the message, the vehicle's owner sent a message to remotely locked the engine, after turning off the engine, the motor cannot start without permission of password. In this way, this system helps in preventing the criminals from stealing vehicles.

* *Corresponding author.*
E-mail address: pulasaniaswini66179@gmail.com

2. Literature Survey

This system is implemented for anti-theft using an embedded system occupied with a Global Positioning System of Mobile and Global System for Mobile communication. The user can track the position of targeted vehicles on Google map. Using GPS locator, the target current location is determined and sent, along with various parameters received by vehicle's data port, via Short Message Service (SMS) through GSM network to GSM modem that is control by ARDUINO UNO board.

In, the hardware and software of the GPS and GSM network were developed. The proposed GPS/GSM based System has the two parts, first is a mobile unit and another is controlling station. The system processes, interfaces, connections, data transmission and reception of data among the mobile unit and control stations are working successfully. These results are compatible with GPS technologies. In, a vehicle tracking system is an electronic device, installed in a vehicle to enable the owner or a third party to track the vehicle's place. This paper proposed to design a vehicle tracking system that works using GPS and GSM technology. This system built based on embedded system, used for tracking and positioning of any vehicle by using Global Positioning System (GPS) and Global system for mobile communication (GSM). This design will continuously watch a moving Vehicle and report the status of the Vehicle on demand.

3. Proposed Work

The main purpose of this project is to prevent vehicle theft. This functionality is achieved by detecting vehicle status in theft mode and by sending an SMS which is generated automatically. This SMS is then sent to the owner of the vehicle. The owner can then send back the SMS tin order to disable the ignition of the vehicle. Thus in this way crimes can be reduced to a great extent as vehicles today are being stolen in large number. Hence, vehicles today require high security which can be achieved with the help of this application. How the system works is when a person tries to steal the vehicle, the microcontroller is interrupted and the command is sent to the GSM modem to send SMS. On the receipt of the message, the owner sends back the SMS to the GSM modem. This is done in order to stop the engine. This GSM modem is interfaced to the microcontroller. This microcontroller on the receipt of the message uses a mechanism that helps to stop the engine. Motor is being used in this project in order to indicate vehicle ON/OFF state.

Further enhancement can be done to this project by using a GPS system that helps to find out the exact position of the vehicle with the help of its latitude and longitude which then can be sent to the owner of the vehicle via SMS. This data can be then entered by the owner on Google map to find out the exact location of the vehicle.

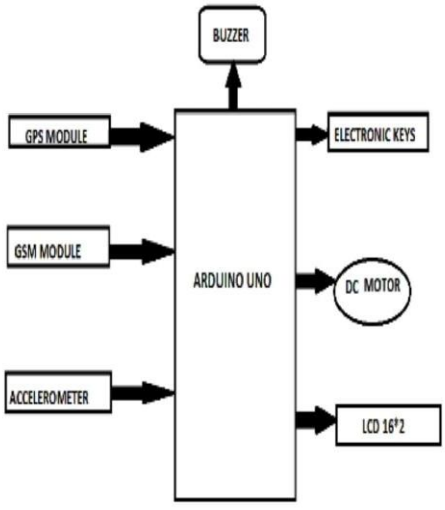

Fig 1 Block diagram of the project

HARDWARE DETAILS OF THE PROJECT

The Hardware components used in this project are

- **Arduino UNO (Atmega328 micro controller)**
- **GPS Module(GY-GPS6mv2)**
- **GSM Module(sim800c)**
- **12C LCD Display**

- **12V Battery**
- **5V Buzzer**
- **Toggle**
- **Connecting wires**

Software Requirements

- Arduino IDE
- Mobile sent Box
- Proteus

Project in Proteus:

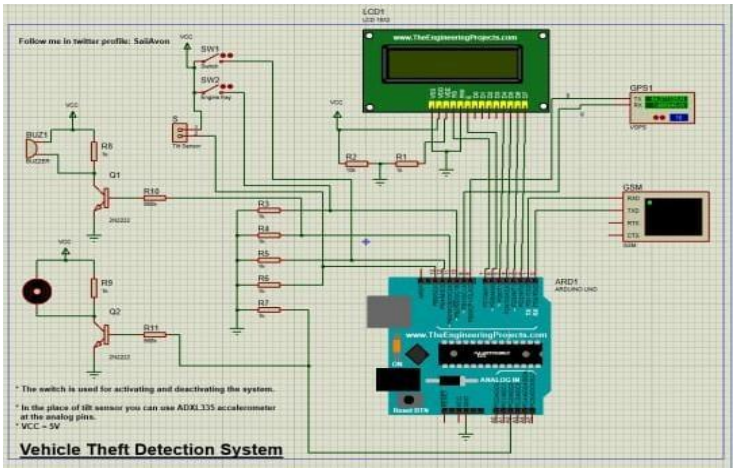

Fig 2 Project in Proteus

4. Result and Implementation

The kit consists of an ARDUINO board, GSM, GPS. This GSM based vehicle theft control system retrieves vehicle status is whether it is in theft mode. This data is fed to the ARDUINO, which is interfaced to a GSM modem. Whenever the vehicle is in theft hands automatically the owner get the message and the owner stop the vehicle through mobile phone.

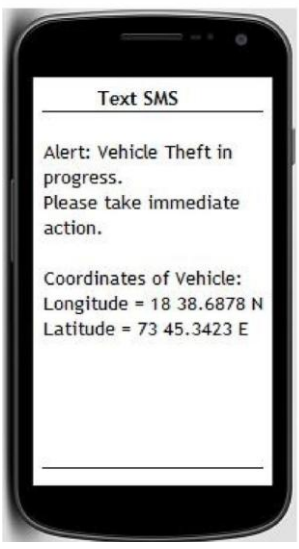

Fig 3 Alert message

5. Conclusion

In this paper we have studied and implemented a complete working model using a ARDUINO Using this project, one can control his vehicle's car engine by means of an SMS. The main purpose of this paper is to prevent vehicle theft. This functionality is achieved by detecting vehicle status in theft mode and by sending an SMS which is generated automatically. This SMS is then sent to the owner of the vehicle .The owner can then sent back the SMS in order to disable the ignition of the vehicle. Thus in this way crimes can be reduced to a great extent as vehicles today are being stolen in large number. Hence, vehicles today require high security which can be achieved with the help of this application.

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