

# GPS AND GSM SYSTEM BASED ADVANCED VEHICLE SECURITY SYSTEM

B. Malathi<sup>1</sup>, D. Kumaraswamy<sup>2</sup>

<sup>1</sup> Student, Sahaja Institute Of Tech. Sciences for Women, Karimnagar, Telangana, INDIA

<sup>2</sup> Assistant Professor, Sahaja Institute Of Tech. Sciences for Women, Karimnagar, Telangana, INDIA

## ABSTRACT

GPS & GSM system are used for designing vehicle security system by using GPS & GSM we can determine perfect location of vehicle and prevent theft. This advanced vehicle security system needs GPS module, GSM modem, infrared sensors DTMF tone decoder 8051 microcontroller, relay switch, etc. GPS system is used to find current location of vehicle and GSM is used to send information to user. Preventive measures like engine ignition off, fuel supply cutoff, and electric shock system can be installed in the vehicles which are controlled by user GSM mobile.

**Keyword:** - GPS, GSM, DTMF Decoder and 8051 microcontroller.

## 1. INTRODUCTION

Now a days vehicle robbery is main problem, in order to provide security for vehicles we have many techniques, every technique have some drawbacks. Vehicle focal locking framework guarantees the best ensure to secure your vehicle from various types of burglary cases. It is a vehicle security gadget that offers fantastic insurance to your vehicle. However this framework couldn't demonstrate to give complete security and openness to the vehicle in the event of burglary. So a more created framework makes utilization of an inserted framework focused around GSM innovation. The outlined and created framework is introduced in the vehicle. Whether one is holder of single vehicle or in excess of 1000, Vehicle Tracking System (VTS) is an answer for spot, track and secure your portable resources. It is intended for exact and ongoing following and reporting of your vehicle(s), regardless of where it is placed. Combination of high-affectability GPS units in vehicle following frameworks has empowered these gadgets to work in different varieties of situations. GPS found in clients vehicle as a burglary counteractive action and salvage gadget. Vehicle manager take after the sign emitted by the following framework to place a victimized vehicle in parallel the stolen vehicle motor rate going to diminished and pushed to off. In the wake of exchanging on the motor, engine can't restart without consent of watchword. This is introduced for the four wheelers, Vehicle following generally utilized as a part of naval force administrators for war fleet administration capacities, directing, send off, ready for and security. The applications incorporate observing driving execution of a guardian with a teenager driver. Vehicle following frameworks acknowledged in shopper vehicles as a burglary avoidance and recovery gadget. In the event that the burglary recognized, the framework sends the SMS to the vehicle holder. After that vehicle manager sends the SMS to GSM modem appended to the controller, issue the important signs to stop the robbery.

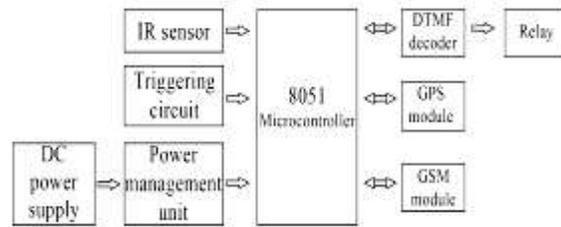
The main aim of the present research is to design and develop an advance and robust security system for vehicles that can prevent theft and provide information on accidents. Present work uses GPS and GSM system and can be made affordable so that it can be used in low cost vehicles even in two wheelers.

## 2. SYSTEM DESIGN MODEL

This paper consists of two main models they are GSM and GPS.

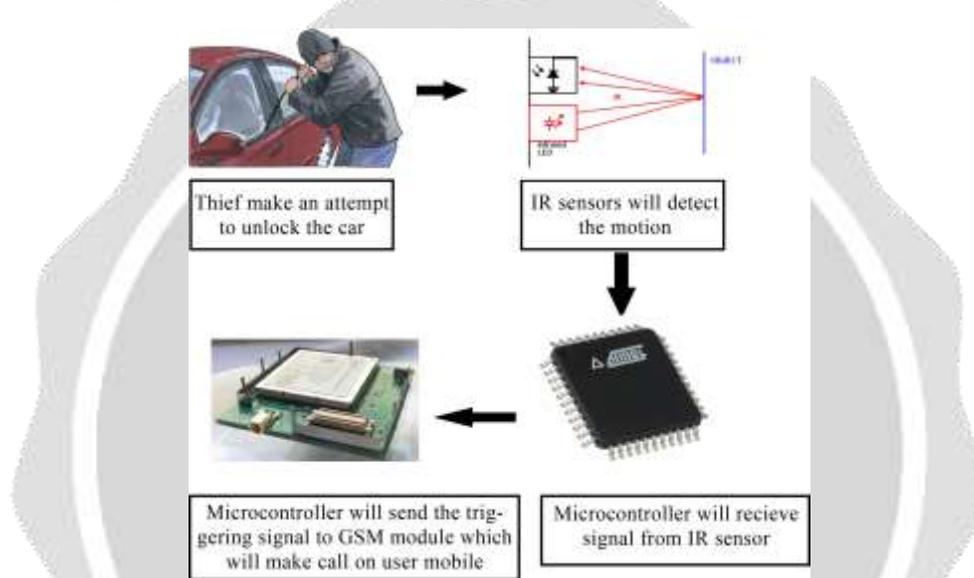
### 2.1 GSM model

GSM system architecture consists of two main blocks one is for detecting movement of thief using infrared sensors and another is for DTMF tone decoder for switching on/off the relay.



**Fig-1: GSM system architecture**

Operation: When thief tries to unlock the car, the infrared Sensors placed near the car door will send the movement or motion to the 8051 microcontroller. Microcontroller will send the triggering signal to GSM relay which is connected to GSM mobile. Microcontroller will send triggering signal three times to GSM mobile and call will be made to user informing him or her that someone is trying to unlock the vehicle.



**Fig-2: Plan of action**

Second block is for controlling or switching different systems like engine ignition, fuel supply off, electric shock mesh and wind screen paint spray using relay the relay is controlled using GSM mobile and DTMF tone decoder. IC MT8870DE is used for DTMF tone detection and decoding. This IC MT8870DE recognizes the dial tone from a phone line and decodes the tone pressed from the mobile keypad. The dial tone which comes out from the telephone set or mobile phone is Dual Tone Multi-Frequency. For every keypad number there is a particular frequency range which can be decoded by DTMF decoder. IC MT8870DE is used to decode 5 digital outputs. We use four relays for controlling ignition cut-off, fuel supply cut-off, windscreen paint spray and electric shock mesh.

The microcontroller is programmed in such a way that each keypad number will be controlling relay which will further control these systems. DTMF tone will be send by the user to GSM mobile placed in the car which will be decoded by MT8870DE to activate security system. If one is assigned for fuel supply cutoff on pressing one on user mobile phone DTMF decoder will decode the keypad tone frequency and microcontroller will switch the relay on/off according to the program in microcontroller.

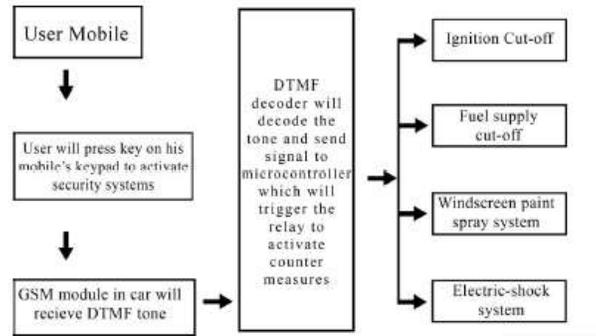


Fig-3: Flow chart

After receiving the information that someone tries to unlock the car user makes a call to GSM mobile placed in the vehicle attached to security system. After the call is established between the user and GSM mobile placed in the car, user sends the signal by pressing the keypad number from his mobile. Each keypad number is assigned for controlling different system on pressing 1 fuel supply system will cutoff, On pressing 2 from user mobile engine ignition will cut-off on pressing 3 electric shock system provided on steering wheel will get activated which will give shock to thief and on pressing 4 windscreen paint spray system get activated so that thief can't drive the vehicle.

**2.2 GPS Model**

The Global Positioning System (GPS) is a space-based satellite route framework that gives area and time data in all climate conditions, anyplace on or close to the Earth. A GPS computes position by accurately timing the signal sent by GPS satellites high over the Earth. Every satellite consist of information about transmitted messages that include: the time the message was transmitted and satellite position at time of message transmission. The GPS or receiver calculate the transit time of every message and computes the separation to every satellite utilizing the velocity of light.

**3. WORKING PINCIPLE**

When accident occurred the input is received by the MEMS then MEMS give the input to the controller then controller process the input and location of the accident where it happened traced and the location and the information is send through the SMS to the particular persons. The SMS sending and tracing of location is done by the use of GPS and GSM.

If vehicle is theft by anybody the location of the vehicle and the fuel on off and the engine on off will also be done by using DTMF. For implementing this here we are using 5 switches. If switch 1 selected the engine will off, for 2 engine will on, for 3 fuel will on for 4 fuel will off and for 5 the location of the vehicle and the theft information is send through SMS. Each of these separations and satellites' location characterize a sphere. The separations and satellites locations are used to calculate the location of the receiver. This location is then displayed by using Google maps or through offline tracking using GSM. GPS gives the information such as direction and speed which are calculated from position changes.



Fig-4: Overall block diagram

#### 4. HARDWARE RESULTS

In offline tracking GPS receiver after receiving the signal from satellites calculates the position of vehicle and converts it in the form of latitude, longitude and altitude and speed information. This information is send to the user mobile by GSM modem which is connected to circuitry board



**Fig-5:** LCD showing Engine off indication



**Fig-6:** LCD showing fuel off indication



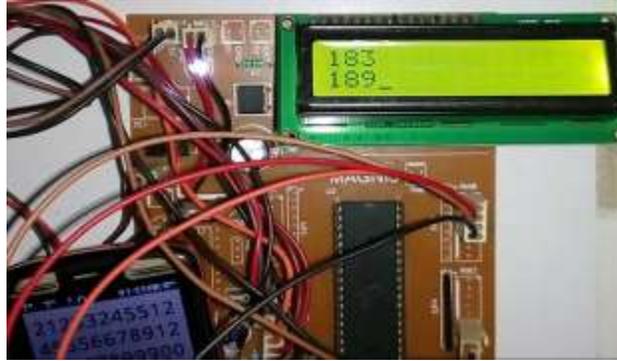
**Fig-7:** LCD showing fuel on indication



**Fig-8:** LCD showing tracking indication



**Fig-9:** LCD showing SENT indication



**Fig-10:** LCD showing PASS key indication

## 5. CONCLUSION

Tracking framework or system is getting to be progressively vital in expansive urban areas and it is more secured than different frameworks. It has continuous ability, rises with a specific end goal to fortify the relations among individuals, vehicle and street by assembling present day data advances or technologies and ready to structures a real time accurate, compelling exhaustive transportation framework. Updating this setup is simple which makes it open to future a prerequisite which likewise makes it more efficient. The proposed work is cost-effective, reliable and has the function of preventing theft and providing accurate tracking system. The advance vehicle security system is one of the essential systems that homogenize both GPS and GSM systems. It is fundamental because of the huge numbers of uses of both GSM and GPS frameworks and the wide use of them by a great many individuals all through the world. This framework intended for clients in area development and transport business, provides real-time information such as location, speed and expected arrival time of the user is moving vehicles in a concise and easy-to-read format. This framework might likewise valuable for correspondence process among the two focuses.

## 6. REFERENCES

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