

## TRACKING AND CONTROLLING OF THEFT CAR

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### ABSTRACT

*In today's world, everyone having their own vehicle and theft is happening on parking because of less security. This project deals with the design & development of a theft control system for an automobile. Vehicle tracking and controlling system installed in the vehicle, to track the location, locking engine motor and information about the thief. The place of the vehicle identified using Global Positioning system (GPS) and Global system mobile communication (GSM). These systems constantly watch a moving Vehicle and report the status on demand. When the theft identified by the owner, the responsible person send SMS to the microcontroller, then microcontroller issue the control signals to stop the engine motor. Authorized person need to send the password to controller to restart the vehicle and open the door. This is more secured, reliable and low cost.*

**KEYWORDS:** *Microcontroller, GSM modem, GPS modem, ignition locking system, spy camera.*

### I. INTRODUCTION

According to the Office for National Statistics, there were almost 358,000 reported instances of thefts from or of a motor vehicle in 2014, with at least 30,000 going uninvestigated. And with car thieves finding new ways to make car crime work for them, such as the recent "pinch and park" trend, it isn't a problem that's going away any time soon.

Tracking and controlling of theft car system ensures the best guarantee to protect your car from different kinds of theft cases. It is a car security device that offers excellent protection to your car. A car with central locking security system helps the user to lock and unlock doors at the press of a button. Mainly two types of central locking systems are used in Auto industry - Automatic central locking system and Manual central locking system that ensures smoother and secured operation. Again this system could not prove to provide complete security and accessibility of the vehicle in case of theft. So a more developed system makes use of an embedded system based on GSM technology. The designed & developed system is installed in the vehicle. The main concept in this design is introducing.

Features in the Tracking and controlling of theft car are as follows:

- **Ignition locking system:** This proposed work is to design an embedded system for implementing an efficient ignition locking system that will be useful to find the car and catch the thief.
- **Location of the car:** This proposed work is to design an embedded system for implementing an efficient tracking of the car. It consists of GSM and GPS modem. This will extract the SMS information from GSM modem, and it will plot the latitudes and longitudes on the Google map. The message of the confirmed location of the car is send to the nearby police station.

- **Spy camera feature:** It is one of the most important aspects of tracking and controlling of theft car system. The image of the thief is captured by the spy camera and these images are send to the car owner at remote location using GSM modem.

## II. LITERATURE SURVEY

Several attempts have been made in the field of theft car to provide the proper assistant to the needy people. However even these significant advances haven't been efficient for tracking and controlling of theft car.

In [1], 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 [2], 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.

In [3], Face Detection System used to detect the face of the driver, and compare with the predefined face. The car owner is sleeping during the night time and someone theft the car. Then Face Detection System obtains images by one tiny web camera, which is hidden easily in somewhere in the car. Face Detection System compared the obtained images with the stored images. If the images don't match, then the information sends to the owner through MMS. The owners get the images of the thief in mobile phone and trace the place through GPS. The place of the car and its speed displayed to the owner through SMS. The owner can recognize the thief images as well as the place of the car and can easily find out the hijackers image. This system applied in our day-to-day life.

In [4], this system provided vehicle cabin safety, security based on embedded system by modifying the existing modules. This method monitors the level of the toxic gases such as CO, LPG and alcohol within the vehicle provided alert information as alarm during the dangerous situations. The SMS sends to the authorized person through the GSM. In this method, the IR Sensor used to detect the static obstacle in front of the vehicle and the vehicle stopped if any obstacle detected. This is avoiding accidents due to collision of vehicles with any static obstacles.

In [5], Kai-Tai Song and Chih-Chieh Yang have a designed and built on a real-time visual tracking system for vehicle safety applications. In this paper built a novel feature-based vehicle-tracking algorithm, automatically detect and track several moving objects, like cars and motorcycles, ahead of the tracking vehicle. Joint with the concept of focus of expansion (FOE) and view analysis, the built system can segment features of moving objects from moving background and offer a collision word of warning on real-time. The proposed algorithm using a CMOS image sensor and NMOS embedded processor architecture. The constructed stand-alone visual tracking system validated in real road tests. The results provided information of collision warning in urban artery with speed about 60 km/hour both at night and day times.

In [6], the remote monitoring system based on SMS and GSM was implemented. Based on the total design of the system, the hardware and software designed. In this paper, the GSM network is a medium for transmitting the remote signal. This includes two parts that are the monitoring center and the remote monitoring station. The monitoring centers consist of a computer and communication module of GSM. The software-monitoring center and the remote monitoring station implemented by using VB. The result of this demonstration shows that the system can watch and control the remote communication between the monitoring center and the remote monitoring station.

In [7] this paper, the proposed tracking system based on cloud computing infrastructure. The sensors are used to monitor the fuel level, driver conditions, and speed of the vehicle. All the data transferred to cloud server using GSM enabled device. All the vehicles equipped with GPS antenna to locate the place. To avoid the drunk and drive, the alcohol sensor installed to monitor the driver status. The proposed technology significantly avoids the accident in highways.

### III. PROPOSED WORK

In this proposed work, an efficient method of vehicle tracking and locking system used to track the theft vehicle by using GPS and GSM technology. When the theft is recognized by the owner then owner sends SMS to the GSM modem. The GSM forwards this message to microcontroller. Then microcontroller verifies whether the received message from user or not (the mobile no is already fed in the microcontroller). At the same time the GPS receiver continuously calculates its location and sends this information to microcontroller in the form of longitude and latitude. After seeking this information microcontroller sends this to the user via GSM. When send SMS to the controller, issues the control signals to the engine motor in order to stop it. Engine motor speeds are gradually decreases and come to the off place. To restart the engine, authorized person needs to enter the passwords. Image of the thief is taken by the spy camera in the car and send to the owner and nearby police station at the same time. In this method, tracking of vehicle place easy and we can catch the thief by information given to the nearby police station, thereby thief cannot get away from the car.

### IV. METHODOLOGIES

As referred earlier this paper comprises of various modules to work upon with to form a full purpose and efficiently designed tracking and controlling system for theft car. The project is been divided into sub modules which are been explained below:

#### Module A: GSM Modem.

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. A GSM modem could also be a standard GSM mobile phone with the appropriate cable and software driver to connect to a serial port or USB port on your computer. Therefore we have used GSM modem in order to get car location and control the car using microcontroller.

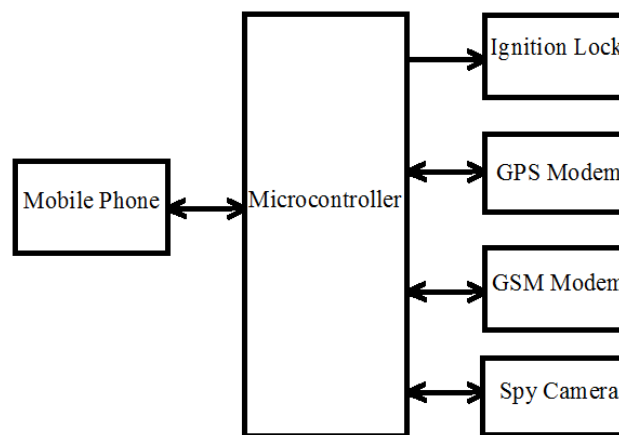


Fig. 1: Block diagram of Tracking and controlling of theft car system

#### Module B: GPS Modem.

The Global Positioning System (GPS) is a space based radio-navigation system consisting of a constellation of satellites and a network of ground stations used for monitoring and control. GPS is operated and maintained by the Department of Defense (DOD). The GPS is a constellation of satellites in orbit around the Earth which transmit their positions in space as well as the precise time. It is the receiver that collects data from the satellites and computes its location anywhere in the world based on information it gets from the satellites.

**Module C: Ignition Locking System.**

In this module, after identifying the SMS send by the car owner microcontroller gives signal to the ignition system to be off. Then the speed of the car starts reducing and then comes to the off condition.

**Module D: Spy Camera**

In this module, we will design a spy camera in the car. Spy camera gives the images of the thief while driving the car without notifying him, so we can get the picture of thief. The microcontroller will get the pictures of the thief from the spy camera at the same time and send them to the owner and nearby police station while sending them the location of the car.

**V. CONCLUSIONS**

In this paper, we have proposed an efficient and easy method of vehicle tracking and locking systems used to track the theft vehicle by using GPS and GSM technology. This system puts into the sleeping mode vehicle handled by the owner or authorized persons; otherwise goes to active mode. The mode of operations changed by persons or remotely. When the theft identified, the responsible people send SMS to the micro controller, then microcontroller active the relay and issue the control signals to stop the engine motor. After that location of the car is send to the owner and nearby police station with the image of thief taken by spy camera. To start the motor again we have to send the SMS to the microcontroller again, then it issue the signal to the relay to start the engine again. It becomes easy to catch the thief. As we have explained that we can control our theft car using our mobile phone, so it becomes very easy and secured way for tracking and controlling of our theft car.

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