

# A Smart Anti-Theft System for Vehicle Security

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**Abstract**— In Modern Days, the vehicle security is so important to protected toward the theft. Nowadays, the vehicle is a important assest of our home but stolen of vehicles is also increases day by day. Because of all this things, we made smart anti-theft security for vehicle by using GSM and GSP. the vibration sensor and sound sensor present on board, when exceeded some predefined value, will trigger the microcontroller to operate the relay driver which controls the engine ignition system of the vehicle. The owner can lock or unlock his/her vehicle with the help of SMS. This complete system is designed taking in consideration the low range vehicles to provide them extreme security.

**Keywords:** Internet, Hardware, Software, vehicle security system, Android Application, Microcontroller

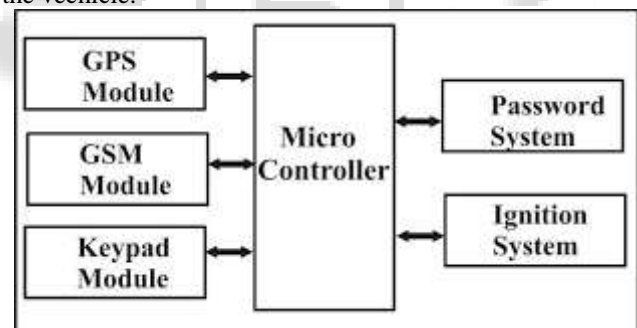
## I. INTRODUCTION

Now day's vehicle thefts are increasing because of unemployment and illiterate people. So to escape vehicles from the thieves here, we are made a project on "Smart Security System for Vehicle". The idea of this project comes from increasing vehicle stolen day by day in a society. Due to irresponsibility on the security system, we made a project to track your vehicle location at anywhere and anytime because of that it can be easily remove the theft slowly. With the new inventions and modified in vehicles, that desire to live a better life is increasing day by day. The new technologies have emerged in almost every field like industries, medical, telecommunication, and now it has also entered in automobile. Apart from their busy work and emergency work, people want to safeguard their vehicle by a checking their vehicle location live on a mobile phone. The new technologies and unique methodologies have tried to fulfil this wish of human beings to some extent by means of Smart Security System for Vehicle. The development of satellite technology has made it easy to identify the vehicle locations. Today GPS is using in cars, cabs, and police vehicles etc. These GPS modules help to found the location of the vehicles. The antitheft system discussing here involves a microcontroller & a GSM module for the communication purposes. The working of important modules used in this work is discussed below. In a vehicle tracking approach, the difficulty first arises from how to locate a vehicle with a smartphone inside. A naive solution is to mount the smartphone on vehicle dashboard, where it can easily receive GPS signals for positioning. This design is incredibly fragile, for professional thieves will disable all suspicious devices after entering a car. Hiding the smartphone deep in vehicle body could relieve this problem, but it means GPS signals may be unavailable and more positioning methods should be considered. The RF-based methods, such as cellular/WiFi localization, are far less accurate than GPS and can make large errors in the regions without dense deployment of cell towers and access points (APs). With the support of motion sensors such as accelerometer and gyroscope, dead reckoning

can be used to estimate a trajectory from a known past position to current position. However, this method suffers from fast error accumulation over time, for small errors in the measurement of acceleration are double integrated into increasingly larger errors in displacement. The Microcontroller processes the GPS information and transmits it to the user using GSM modem by SMS every 10 minutes when the user asked that from the system by sending SMS contains code. The Microcontroller also reads engine parameters from vehicle data port and sends them to the second module in the same SMS. The second module is a recipient GSM modem that is connected to a PC or a laptop. The modem receives the SMS that includes GPS coordinates and engine parameters

## II. OBJECTIVES

The main objective of this topic is that when any other people except owner to try to stole the vehcles then it cannot stole them without owner permission. When anyone try to theft vehicle the otp will send on owner register mobile number using GSM. The owner can get the right information regarding their vehicle whenever they want using GSP or anyone try to stole their vehcles. When you do anything with vehicles the first allow you to enter the otp then start the vehicle.



## III. METHODOLOGY

### A. GSM Module:

A GSM modem, 3G modem or SIM bo battery and display. The terms SIM box, GSM gateway or GSM router are mostly used for devices that route phone calls through the GSM network and the term GSM modem or 3G modem for devices specialized in wireless data transmission. However for GSM modem software they often are interchangeable. A GSM modem provides the SMS software with a secure gateway to the GSM network, with only two limitations. The amount of SMS message that can be sent and/or messages per minute, depending on the GSM modem and network, and it is not possible to send SMS messages with alternative numeric or alphanumeric sender id's. GSM abbreviates Global System for Mobile communication. For mobile communication this device is used in all over the world. It consists of SIM slot in

which a SIM is to be inserted. It is having with a unique no. called as IMEI no. this unique no. is different. In this system data from GPS is transmitted to given Smartphone through GSM itself



**B. GPS Technology:**

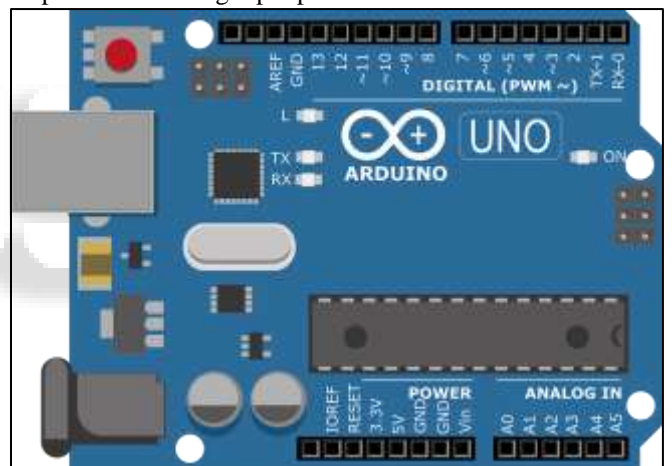
GPS or Global Positioning System is a position in space back to earth. The signals are obtained by GPS receivers, such as navigation devices and are used to calculate the exact position, speed and time at the vehicles location. GPS is well-known for its military uses and was first developed by the US to aid in its global intelligence efforts at the height of the Cold War. Ever since the early 1980s, however, the GPS has been freely available to anyone with a GPS receiver. Airlines, shipping companies, trucking firms, and drivers everywhere use the GPS system to track vehicles, follow the best route to get them from A to B in the shortest possible time. The GPS is known as Global Positioning System used to trace the location of vehicle. A GPS framework computes its position by accurately timing the signal sent by GPS satellites high over the Earth. GPS Receiver gets the location information from satellites. It consists of internal RTC back up and can be directly connected to USART of the microcontroller. The current date, time, longitude, altitude, speed, and travel direction/ heading among other data are provide by the module and can be used in many applications including navigation, fleet management, tracking system, mapping and robotics. · GSM is known as Global System for Mobile Communication used for communication purpose. GSM module is basically used here for receiving of calls and for sending of confirmation message. Global system for mobiles (GSM) technology is used to establish cellular connection. It is used for transmitting mobile voice and data services. It contains everything needed to support the microcontroller. · A microcontroller is a compact integrated circuit designed to govern a specific operation in an embedded system. A typical

microcontroller includes a processor, memory and input/output (I/O) peripherals on a single chip. · Keypad is used for entering the



**C. Arduino UNO R3:**

The Arduino board is very popular and comes with either 1 of 2 microcontroller chips, the Atmega168 or the Atmega328. Out of these, the Atmega328 is the more advance and upgraded chip produced by Atmel which are used with Arduino board. The Atmega328 has 32k of flash program memory and 2k of internal SRAM. The Atmega328has 28 pins. It has 14 digital I/O pins, of which 6 is used as PWM outputs and 6 analog input pins.



**IV. RESULT**

The online based tracking framework is a framework planned by joining of a few present day data and communication technologies. The framework comprises of vehicle-mounted following gadgets, a focal server framework and web based application. Through the framework, clients will have the facility of observing the area graphically and other important data of vehicle. This framework is intended to serve undertakings with a boundless number of vehicles and complex utilization prerequisites. The online framework empowers client to scan area track on guide through created web application install Google Map and interface with database server for vehicles track subtle elements. Utilizing the online based framework empowers clients with diverse working framework stages to effectively achieve the requested subtle elements by the presence of web access. Fig. 9 demonstrates an outline of a common online based vehicle tracking framework. The area is acquisitioned from satellite utilizing GPS receiver area coordination sent through GPRS,

the GSM system will pass the data to the objective server as HTTP packets. Also through the web the customers can peruse track on electronic guide utilizing reason composed web application on site. The client can discover the way of the terminus or complete course with headings (Fig. 10) where he need to experience web application.



## V. CONCLUSION

A modest effort in improving the anti-theft security system for vehicles has been done. Extra features such as stopping the vehicle from the registered mobile number when someone theft the vehicle and also emergency calling feature. 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. 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. A smart anti-theft 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.

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## REFERENCES

- [1] Thiagarajan, L. Ravindranath, K. LaCurts et al., "Vtrack: accurate, energy-aware road traffic delay estimation using mobile phones," in Proceedings of the 7th ACM Conference on Embedded Networked Sensor Systems, pp. 85–98, Berkeley, CA, USA, November 2009.
- [2] H. Gong, L. Yu, and X. Zhang, "Social contribution-based routing protocol for vehicular network with selfish nodes," International Journal of Distributed Sensor Networks, vol. 10, no. 4, p. 753024, 2014.
- [3] Manjunath A. Naik, Ramaprasad.P, Ruschil Ray, Shruthi.K, Shubham Pansari, "Design of an Antitheft vehicle Tracking System with a Smartphone

- Application" 2015 International Conference on Information Processing (ICIP) Vishwakarma Institute of Technology, pp. 775-760, Dec 16-19, 2015.
- [4] Bibhuti Bhusan Biswal, Pritpal Singh, Sujit Kumar Pattanayak, Tanjot Sethi, "A Smart Anti-theft System for Vehicle Security", International journal of Materials, Mechanics and Manufacturing, vol.3, No.4, pp. 249-254, November 2015.
- [5] K.Dinesh Kumar and B. Sasidharan " Password Based Lock for Bike Security with Ignition Key Control System." IJSART, volume 2, Issue 5, May 2016.
- [6] Archie O.Pachica and Dhava S.Barsalote " Fingerprint Based Anti-Theft System for Vehicle Safety." International Journal of Applied Engineering Research, vol.12 pp. 2680-2687, November 11, 2017.
- [7] V. M. Ibrahim and A. A. Victor, "Microcontroller based anti-theft security system using GSM networks with text message as feedback," International Journal of Engineering Research and Development, vol. 2, no. 10, pp. 18-22, Aug 2012
- [8] M. A. A. Rashed, O. A. Oumar, and D. Singh, "A real time GSM/GPS based tracking system based on GSM mobile phone," IEEE Journal on Signals and Telecommunication, vol. 3, no. 1, pp. 65-68, March 2014.
- [9] V. Ramya, B. Palaniappan, K. Karthick,(April 2012) "Embedded Controller for Vehicle In-Front Obstacle Detection and Cabin Safety Alert System", International Journal of Computer Science & Information Technology (IJCSIT) Vol. 4, No 2, April 2012
- [10] alil Ghahramani, Masoud Sabaghi, Hamed Shams Oskouie, Design an Intelligent Monitoring for Anti-Theft System Using GPS/GSM, Indian Journal of Engineering, Volume 1, Number 1.
- [11] Hossam Abdel Rahman Mohamed, A Proposed Model for Radio Frequency Systems to Tracking Trains via GPS, I.J. Intelligent Systems and Applications.
- [12] M. S. Joshi and D. V. Mahajan, "Arm 7 based theft control, accident detection and vehicle positioning system," International Journal of Innovative Technology and Exploring Engineering, vol. 4, no. 2, pp. 29-31, July 2014.
- [13] J. S. Bhatia, Pankaj Verma, "Design and Development of GPS-GSM Based Tracking System with Google Map Based Monitoring", International journal of Computer Science Engineering and Applications (IJCSEA), Vol.3, No.3, pp. 33-40, June 2013.
- [14] Amit Pavanikar, Ganesh Dhage, Shital Mohol, "GPS Vehicle Tracking System", International journal of Emerging Engineering Research and Technology, vol. 2, issue 7, pp. 71-75, October 2014.