

# MONITORING OF VEHICLES VIA IOT

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## **Abstract**

*With the development of Science and Technology, the number of motor vehicles has increased to a large extent. But now, for many days, road accidents have risen to an unknown level. Therefore, it is vital that we take some steps to mitigate these road accidents. This system is composed of a microcontroller, a GPS receiver and a GSM modem. This system involves an integrated single-board system fitted with GPS and GSM modems, along with a microcontroller mounted in the car. Its position can be recorded by SMS message during vehicle movement. Using GSM and GPS technology, the device allows vehicle tracking and offers the most up-to-date vehicle information available.*

**Keywords:** *Anti-theft, GSM, GPS, Security, Vehicles.*

## **I. INTRODUCTION**

Every year, nearly 36,000 vehicles, which amount to Rs.115 crore, are stolen in India out of these; only about 14,500 are traced, often in un-roadworthy conditions, with many components missing. These vehicles are stolen only because the chance to steal them is offered to thieves. Quite frequently, vehicles are left poorly covered and unattended. It is only with the configuration of anti-theft systems that the attempts of a thief can be frustrated. The combination of high-affectability GPS units in vehicles following frameworks has allowed these devices to function in various types of situations, such as distinctive ravines, urban gulches, and much of the system coverage is solid under significant foliage[1]. Right now, the following GPS vehicle guarantees their well-being as a voyager. This vehicle was found as a burglary counteractive action and salvage gadget in customer vehicles following the system. Following the sign issued by the following framework, the vehicle manager or police can position a victimized vehicle in parallel with the stolen motor vehicle rate that will decrease and push off. In the aftermath of the engine swap, the engine cannot restart without the permission of the password. For the four wheelers, this system was implemented, followed by vehicles typically used as part of naval force administrators for war fleet management capabilities, controlling, sending, ready for and security[2].

The services include the observation of a guardian's driving success with a teenage driver. The vehicle is known as a robbery prevention and recovery gadget in shopper vehicles following frameworks. The system sends the SMS to the vehicle holder if the burglary is recognized.

After the vehicle manager sends the SMS to the GSM modem attached to the controller, the essential signs to stop the theft are released. The main point of the current exploration work is to outline and establish a sharp and strong safety system for vehicles that can prevent robbery and provide mistake data[3]. The framework being produced through the present work utilizes GPS and GSM innovation and can be made moderate so it can be utilized as a part of ease of vehicles even in bikes. The purpose of this study is to reduce accidents caused by gas leakage in the world of automobiles, as CNG is widely used. As these gases are odorless in most situations, rendering it difficult for human olfactory senses to detect leakage, this paper effectively deals with the sensing and warning mechanism in conjunction with the automatic regulation of the gas regulator using a high tightening torque servo motor[4].

For the detection of leakage and buzzers, GSM, relay, and other parts, a tin oxide sensor MQ4 is used to warn the neighborhood about the leakage and also to cut the supply from the regulator and to create a power supply with the aid of a relay. The device follows a sequence of steps during leakage, i.e. the sensor produces a charge that further provides a driving current to the ARDUINO system connected to the buzzer, GSM, relay and servo motor that carries out its immediate actions to alert the person concerned by sending text messages, generating alarms, switching the power supply, and releasing the knob from the cylinder valve. Since previous documented history, people have operated in dangerous atmospheres. Sources of potentially deadly carbon monoxide and life-giving oxygen were the open flame light sources of prehistoric cave painters, and could have eventually proved fatal in a poorly ventilated environment

In many previous research works, the authors have given some analytical view of the circuit used in the various projects; while in some other global positioning system (GPS) is commonly used as a global navigation satellite system is used to locate the vehicles and to stop the vehicle if stolen. The location information is sent in the form of a message containing latitude, longitude and speed information to the owner of the vehicle or location can also be traced using the internet through Google maps. A number of developments have taken place in anti-theft systems for vehicles and some of the relevant ones are as follows. A hybrid GPS-GSM localization of vehicles Tracking System has been developed that portrays an incorporated GPS-GSM framework to track vehicles utilizing Google Earth application[5]. The remote module has a GPS mounted on the moving vehicle to recognize its present position, and to be exchanged by GSM with different parameters procured by the car's information port as a SMS to a beneficiary station. The objective of this framework is to oversee police cars dissemination and auto burglary alerts. The purpose of this mechanism is to regulate the dissemination of police cars and auto burglary warnings. The creation of an electronic gadget in a vehicle is consolidated by a security system focused on RFID, GPS and GSM, with appropriate planned computer programming to enable the organization to monitor the area of the vehicle. He/she has to use fingerprints at the stage where the car pictures the worker. The arduino matches the fingerprint with its database records and, by means of the GSM module, sends the representative's id, taxi id & taxi position coordinates to the organization unit. The GSM modem in the organizational unit will get the message via GSM[6].

On the off chance that the worker ends his/her in an issue, he/she will press the catch. Arduino will distinguish the activity and sends a signal to the GSM which will arrange it with to the organization unit and police. The configuration and implementation of an automotive burglary control system that is used to anticipate/control the theft of a vehicle. The developed framework

utilizes an implanted framework based on the engineering of the Global System for Mobile Correspondence (GSM). In the car, the designed and developed system is implemented. In addition, a portable interface is connected with the arduino, which is thus coupled with the motor. When the car is stolen, the data is used for further handling by the vehicle manager. The data is passed onto the focal handling protection framework which is as the sms, the arduino unit peruses the sms and sends it to the Global Positioning System (GPS) module and utilizing the triangulation system, GPS module sustains the precise area as scope and longitude to the client's versatile. A protection system hostile to burglary that uses Dual Tone Multi Frequency (DTMF) and GSM to screen and cover an automobile with an installed framework outline. This protects the car or truck from breakage. It naturally grounds the car when actuated by detaching the ignition scratch supply from the auto battery. In an attempt to steal through the car doors or boot, the machine sends a text message to the owner of the car and starts an alarm at the same time[7].

The outline and improvement of a GSM based vehicle robbery control framework for a car. The created framework makes utilization of an inserted framework focused around GSM innovation. An interfacing mobile or GSM modem is associated with the arduino, which in term is joined with the engine through relay. The data is sent to the owner in the event that the car is stolen, that someone has stolen his vehicle. After that, the user or owner will send the message via transfer or relay to the GSM modem or mobile that is connected to the motor ignition to turn off the engine. A GPS-based tracking system based on a cell phone text messaging system that keeps track of a vehicle's position and its speed. For speed and location, the device may provide real-time text notifications[8]. The present location may be locked and if the vehicle is moved from its present locked location, the device will notify the owner. The GSM modem or mobile will notify the owner every hour by messaging its location in the form of information about latitude, longitude and speed. By simply transmitting the stop message to the GSM modem or mobile connected to the circuit board, the owner or user may monitor or stop the vehicle. The signal ignition system will turn off after receiving that message. Gas detectors have been developed for gas leak detection. A system with a valve that analytically illustrated how much methane was present in the atmosphere was the first gas detector. Via a sensor called the catalytic diffusion sensor, methane was detected. The instrument was able to reliably provide a reading of how much gas was present in this way. The issue with this form of meter was that you had to see how much methane was present each time; you had to push a button on the display manually. Currently, gas detectors have batteries that allow the tool to operate for long periods of time without having to be shut off. Modern-day detectors also not only measure oxygen and methane, but also measure multiple gases[9].

## II. CONCLUSION & DISCUSSION

The section of the most appropriate components such as GSM, GPS, and relay and microcontroller unit makes possible the development of a vehicle security system which adopts the GSM and GPS technologies. The device will surely help its owner to safeguard his/her vehicle wherever it goes. The device's architecture helps it to interact with missing vehicles and monitor their location. The sensor warning and the GPS receiver are critical features that warn the owner of the vehicle and provide much-needed communication for vehicle tracking. The design, however, relies strongly on internet availability and Network provider signal without which no monitoring and communications can be done. Accordingly, the microcontroller software used to communicate with the various module hardware operates to

monitor, receive and send user SMS alerts and to turn the main switch, engine and alarm on and off. The different software allowed the established programmer to be designed and tested. This demonstrates that the microcontroller has produced the anticipated performance. Testing and evaluation of the established system helps to achieve the projects desired performance. The system that has been built is practical, reliable, accessible, effective and sustainable.

### III. REFERENCES

- [1] K. Katta, I. Dutta, D. Gogoi, B. Gayan, and J. Rabha, "Review on Advanced Vehicle Security System with Theft Control and Accident Notification," no. 7, pp. 5–9, 2014.
- [2] P. R. . C. Vikhankar, A D, "Advanced Vehicle Security System with Theft," vol. 5, no. 7, July 2016, pp. 12881–12894, 2016, doi: 10.15680/IJIRSET.2016.0507149.
- [3] H. P. Han and H. M. Tun, "Advanced Car Security System Using GSM," vol. 4, no. 5, pp. 4–8, 2014.
- [4] T. Alwada, A. H. Mohammad, N. El-omari, and H. Aldabbas, "An Overview of an Advanced Vehicle Security System," *International Journal of Computer Science and Information Security (IJCSIS)*, vol. 12, no. 3, pp. 34–38, 2014.
- [5] J. Sayyad, M. Taha, and A. Sankpal, "Advanced Car Security System," *International Journal of Scientific Research in Network Security and Communication*, vol. 5, no. 3, pp. 165–169, 2017.
- [6] M. Pawar, S. Wakhare, A. Yewale, and H. Gawari, "Vehicle Security and Tracking System With Clash Driving Alert," *International Research Journal of Engineering and Technology (IRJET)* e-ISSN: 2395 -0056 p-ISSN: 2395-0072, vol. 4, no. 4, pp. 2168–2173, 2017.
- [7] R. Agarwal, "Vehicle Security System Using IoT Application," *International Research Journal of Engineering and Technology*, pp. 4–6, 2018.
- [8] V. K. Sehgal, S. Mehrotra, and H. Marwah, "Car security using Internet of Things," *1st IEEE International Conference on Power Electronics, Intelligent Control and Energy Systems, ICPEICES 2016*, pp. 1–5, 2017, doi: 10.1109/ICPEICES.2016.7853207.
- [9] O. F. Mendoza, "Microcontroller-based Vehicle Security System with Tracking Capability using GSM and GPS Technologies," *Asia Pacific of Multidisciplinary Research*, vol. 5, no. 2, pp. 114–120, 2017.