

ADVANCE SECURITY SYSTEM FOR VEHICLES

Monika Anand

*Faculty of Engineering and Technology,
Jain (Deemed-to-be University), Ramnagar District, Karnataka – 562112
Email Id: a.monika@jainuniversity.ac.in*

Abstract

In the present growing economy, the country faces the uprising of the crime rate and vehicle theft occurs, which is the main concern for conducting this project. For public vehicles, the protection of vehicles is highly important. In the car, the vehicle monitoring and locking system is mounted to monitor the position and the engine locking motor. The location of the vehicle is determined using the Global Positioning System (GPS) and the Mobile Contact System of the Global System (GSM). These systems monitor a moving vehicle continuously and report the status on demand. GSM sends SMS to the microcontroller when the theft is detected, then the microcontroller issues control signals to stop the engine motor. To restart the vehicle and open the door, the approved person needs to submit the password to the controller. This is a system that is more stable, reliable and cheaper.

Keywords: Alert, GSM, GPS, Security, Vehicles.

I. INTRODUCTION

The safety of vehicles is extremely essential for every private and public vehicle owner. One of the major problems that motorists face is the robbery or theft of vehicles. Aside from crashing, it is also considered one of every car owner's greatest fears. For various purposes, vehicles usually get stolen. Some people just steal them to joyride around, and one chance is robbery. Some steal vehicles to commit more crimes, while others steal vehicles to strip or sell parts of them. The motorcycle is one form of vehicle found to be easy to steal. By tracking the owner of the vehicle to where they park during the day or night, skilled robbers also discover the vehicle they intend to steal[1]. They then size the situation up and come up with what the vehicle needs to be bagged. So, as the user approaches the destination, thieves just catch it or find ways to get it, especially at home. Most of the time, the only way to keep vehicles safe is to lock the vehicle and place chains. They still appear to check if it is still there while motorists are far from the location where their vehicle is parked. Often, if it is small, thieves place the vehicle inside a van or a freight truck for transport. There is no simple and sufficient way for owners to locate their vehicle than to call on active respondents such as the police to help them. However, due to the lack of sources or equipment that can easily locate the vehicle, the police can take a long time to find the vehicle. There are no warnings to make them aware of cars being stolen or emergency circumstances for users. In these types of cases, rapid response is very critical[2].

In the Philippines, vehicle owners use an alarm to alert them that somebody is moving the vehicle. Alarms may seem like a good way to attract attention to someone's attempt on the vehicle, but people have gotten so used to false alarms that they do not investigate or even bother to check why the alarm went on. This is because warning sensors are so sensitive that the car's alarm is raised even by dragging noisy vehicles. Another common way to protect the vehicle is to lock it with its key when the owner leaves it in a parking spot, but a thief can easily control and break its lock in just a minute, simply by using other tools that can operate the vehicle. Chains are put at home by the owner to ensure the safety of the car, but the vehicle may be taken away from the owner again by using a heavy tool to cut the chain. The goal of the project is to help vehicle owners become more relaxed and safe when using their vehicle[3].

The owner no longer has to continuously check with the sensor if the car is still in the parking area, as when the sensor is triggered, the safety warning is activated and the system sends notifications that can alert the owner. Since the system can monitor the functions of the vehicle, there is also no need to position chains. It will turn off/on the engine automatically and the vehicle's key switch. Vehicle owners will no longer have to worry when they leave their vehicle in a public or private location with the aid of this anti-theft system, since the GSM module allows contact between the vehicle and the owner[4]. The GPS receiver module can provide the vehicle's reliable position via coordinates when the vehicle is stolen, which will help locate the stolen vehicle. In summary, the project can reduce the risk of vehicle theft and increase the possibility of vehicle thieves being captured. After careful analysis of the present situation of vehicle security systems, the researcher came up with this study that aimed to design and develop a microcontroller-based vehicle security system with tracking capability using GSM and GPS technologies[5].

Specifically, this project study aimed to work on these objectives: .The Microcontroller Unit, Global System for Mobile Technology and Global Positioning System Technology are the most suitable components needed for the construction of the device; the design of the required circuits capable of securing and communicating with the vehicle and monitoring the location of the vehicle; the creation of the microcontroller software used to communicate with the various module. The text messages that the owner sends to the device's GSM module serve as the order for the vehicle protection system based on the microcontroller. The owner must follow the proper format of text to be sent to the GSM module of the device in order to trigger the right actions that must be taken by the device. Once the owner sends the incorrect text message format to the GSM module, it will be ignored or the system will not take any action. If the right password but the incorrect command is followed, the owner will receive "invalid keywords" from the computer linked to the car[6].

Security system various new features are included in addition to the engine immobilizer and alarm. Few of the important features supported by this system are alerting owners by SMS about the theft attempt; allowing users to control the system remotely by SMS, tracking the location of vehicles using GPS technology, Remote Keyless System, servo motor operated locking system. Redundancy is retained even in the worst case scenario to make the device reliable, but a tradeoff between cost and redundancy was required due to cost constraints. This device is designed to be compatible with virtually all vehicle brands. GPS vehicle monitoring currently ensures their safety when they drive. In client vehicles, this vehicle monitoring system is found as a theft prevention and rescue mechanism in client vehicles. The car owner or police follow the signal provided by the tracking device to locate a stolen vehicle parallel to the engine speed of the stolen vehicle, which will decrease and push off. After the engine is turned off,

the engine cannot restart without a password. Vehicle monitoring is commonly used by navy operators for navy management, routing, and sending, on-board information and security functions. This device is installed for four wheelers. The apps include tracking a parent's driving success with a teen driver. As a theft prevention and recovery device, vehicle tracking systems are approved in consumer vehicles. The device sends the SMS to the vehicle owner if the theft is detected. After the owner of the vehicle sends the SMS to the controller, the requisite signals are sent to stop the engine.

An efficient automotive security system. Using an embedded device occupied by a Global Positioning System and a Global Mobile System, this system is introduced for anti-theft. Using Google Earth, the client communicates with vehicles via this framework and decides their current positions and status. On Google Earth, the user can monitor the location of targeted vehicles. Using the GPS locator, the target current position is determined and transmitted via Short Message Service (SMS) via GSM networks to a GSM modem that is connected to a computer or laptop, along with various parameters obtained by the vehicle's data port. The GPS coordinates are corrected using a discrete Kalian filter. In this paper, a low-cost vehicle tracking and monitoring system is presented[7].

Vehicle Protection System based on microcontroller with tracking capabilities using GSM and GPS technologies is a platform that can be used to extend vehicle safety, as it can monitor missing vehicle area, and allow specialists to provide reliable evidence that the vehicle is stolen. The role utilizes the technologies of the Global System for Mobile (GSM) and the Global Positioning System (GPS), which requires the use of the necessary segments of the GPS collector module, GSM module, and microcontroller. It also uses a vibration sensor that detects the movement of vehicles and a buzzer that, when sensors are activated, sends a warning. Design and implementation of a smart card car safety system based on microcontrollers with call intrusion warning capability[8]. For the effective device implementation, a PIC16F877A microcontroller, RFID scanner, RFID card and a GSM modem were used. To act as the whole brain of the device that holds the specific RFID card number and controls the electromagnetic relay and the GSM MODEM, the PIC16F877A microcontroller was used. The electromagnetic relay acted as the mechanical tool that secures the car ignition system, and when an intrusion attempt occurs, the GSM modem was used to call the car owner. The plan and development of a propelled auto safety system using GSM technology are outlined in this framework. To transmit a warning flag and monitor the course, it utilizes GSM portable communication. The monitoring and coordination between the client and the system is done on the mobile phone through a short message administration (SMS) convention. In the event that the auto entry is illegally opened or the auto is vibrated, a warning flag is triggered and an SMS message is sent quickly to the mobile phone of the proprietor[2].

II. CONCLUSION & DISCUSSION

Although securing a vehicle completely is not possible, this project aims to shorten the gap between flexibility and security of the vehicle. This initiative presents a realistic concept for achieving and improving safety and avoiding the events of robbery and accidents. IoT also has tremendous capacity to automate a number of functions to a certain degree while still at its beginning stage and to ensure that the systems continue to operate without human interference. This project also aims to develop current security systems that provide fair security, but have some disadvantages. There are ways in which the concept can be expanded and more progress in the system's robustness and capabilities can be made.

III. REFERENCES

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