

Vehicular Automation using IOT for Theft Avoidance

Sanjan S V¹, Somu Shekar B.R², Puneeth T P³, Shruthi B S⁴

¹ Student, Information Science and Engineering, APSCE, Karnataka, India

² Student, Information Science and Engineering, APSCE, Karnataka, India

³ Student, Information Science and Engineering, APSCE, Karnataka, India

⁴ Assistant Professor, Information Science and Engineering, APSCE, Karnataka, India

ABSTRACT

In today's world almost every common man owns a vehicle. Theft is a common issue which everyone faces in parking and sometimes driving near in secure places. Vehicle security and accident prevention is more challenging. So, in order to bring a solution for this vehicle security enhancement and accident prevention system can be developed through tracking and locking, fuel theft, accident detection and prevention, driver fatigue, pollution control and speed limiting with efficient vehicle management system. The need for this is to provide security to the vehicles by engine locking system which prevents it from unauthorized access. It can also prove beneficial to find out the exact location of the accident. This proposed work is an attempt to design such a system using global positioning system (GPS) to determine the precise location of a object, person or other asset to which it is attached to and transmit this information using GSM modem. Ultrasonic Fingerprint can also be used for the unlocking of the doors and starting of the engines.

Keyword: - Ultrasonic scanner, GPS and GSM, IOT.

1. INTRODUCTION

With the help of evolving technologies, many different security systems have been developed for detection of car thefts and tracking the location of the cars. The main drawbacks of failures of these systems in securing the cars was that they do not assist owners in recovering a stolen car, they do not let owner communicate with its car online even if the owner is certain that his car has been stolen, also the user cannot find out the current status of his car when his car is being used by some other third party. The proposed security system in this paper is an integration of existing technology GPS that is currently used in location tracking and modern communication technology SMS. SMS is the easiest way that is used widely for communication purposes because they are inexpensive, convenient and messages can be transmitted and received with high reliability. The combination of GPS and GSM and fingerprint scanner technologies will provide effective, real time vehicle location, and reporting of the status to the owners and access of the vehicle. It will let owners by sending an SMS to owners about the location and duration of the vehicle.

2. LITERATURE SURVEY

In the proposed system, if someone tries to access the car, the owner of the car will be sent a message through the GSM model.

If the owner feels that his car is used by an unknown user then he can send a message to GSM module to turn off the engine. Then, the system will check the mobile number in the received message, to confirm that the number is authorized to access the security system. If the phone number is legal, the engine will not start. To open the door or restart the engine, an authorized person needs to enter the password by sending an SMS. In this method, tracking of vehicle location becomes easy with the help of GPS technology, and the door-lock feature ensures that the thief cannot get away from the car.

If the owner needs to track the vehicle, he/she has to send SMS that contains a special code, after which he/she will receive an SMS containing the GPS coordinates of the car. The SMS updates its content every predetermined period

of time. Also, the car owner can connect another GSM modem with a laptop to track the vehicle immediately. The implemented tracking and security system can be used to monitor various parameters related to safety - anti-theft, emergency services and engine stall. Fuel level can be monitored all the time so as to prevent fuel theft. A threshold value would be set to indicate a minimum level of fuel required in the vehicle. If the fuel level drops below this threshold value, an SMS is generated and sent to the owner, indicating about the situation. Vehicle security will be enhanced by ignition control system. Obstacle detection system stops the vehicle when an obstacle is detected using IR sensor and pollution detection helps in controlling pollution from vehicle using CO sensor. GSM and GPS are used for tracking the location of vehicle and for providing SHORT MESSAGE SERVICE (SMS) material.

2.1 GPS Technology *The Global Positioning System (GPS)* - is a space- based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. The system provides critical capabilities to military, civil and commercial users around the world. It is maintained by the United States government and is freely accessible to anyone with a GPS receiver. There are no subscription fees or setup charges to use GPS. A GPS receiver must be locked on to the signal of at least three satellites to calculate a 2D position (latitude and longitude) and track movement. With four or more satellites in view, the receiver can determine the user's 3D position (latitude, longitude and altitude). Once the user's position has been determined, the GPS unit can calculate other information, such as speed, bearing, track, trip distance, distance to destination, sunrise and sunset time and more. GPS receiver is used here to detect the location of the vehicle and provide information to responsible person through GSM technology. GSM Technology GSM/GPRS modem can be connected directly to your computers serial port for wireless GSM communications including sending and receiving text messages. It can also be connected to your remote RS232 serial equipment allowing you to "dial up" your system for remote management. This includes data loggers such as Data Taker and Pace Scientific. GPRS connectivity also allows you to integrate this modem in your applications for an "always on" remote management system.

3. Proposed System

In the existing system we are using GPS and GSM technology to detect and inform about the theft of the car to the owner and police. The drawbacks of existing system are:

1. The owner is informed only after the theft of the car.
2. GSM mainly depends on the network coverage.

Here we are proposing a well advanced system, which controls the theft of the car in the base level itself. In our proposed system we are using finger print scanning technology that scans the finger print of the owner using ultrasonic finger print reader. If the finger print matches then it allows the user to access the vehicle .If not, it will use the existing technology like GSM and GPS system to inform the owner.

The owner can add the guest users, so that they can access his vehicle in the absence of the owner, and also informs the owner about it.

If other than owner or guest user try to access the vehicle then owner receives a prompt mention whether to allow access or deny

3.1 Ultrasonic scanners

The latest fingerprint scanning technology is an ultrasonic sensor, which was also used in smartphone. Qualcomm and its Sense ID technology are also a major part of the design of the smartphones.

To actually capture the details of a fingerprint, the hardware consists of both an ultrasonic transmitter and a receiver. An ultrasonic pulse is transmitted against the finger that is placed over the scanner. Some of this pulse is absorbed and some of it is bounced back to the sensor, depending upon the ridges, pores and other details that are unique to each fingerprint.

There isn't a microphone listening out for these returning signals, instead a sensor that can detect mechanical stress is used to calculate the intensity of the returning ultrasonic pulse at different points on the scanner. Scanning for longer periods of

time allows for additional depth data to be captured, resulting in a highly detailed 3D reproduction of the scanned fingerprint. The 3D nature of this capture technique makes it an even more secure alternative to capacitive scanners.

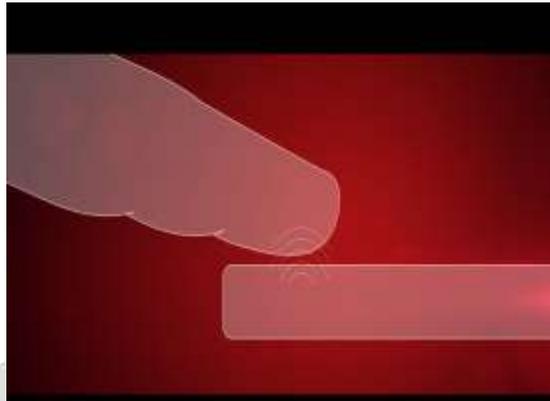


Fig -1: 3-d view of ultrasonic scanner



Fig -2: Pattern of skin ridges

3.2 Advantages

Finger print is unique for every person. No two identical twins also share the same finger print.

Highly robust and can be accessed by a single person or a guest user.

3.2 Future Enhancement

For the guest user having a OTP generated and can be access in the time interval of 10 minutes.

Having the internal weight scanned and if the vehicle is not locked after a given interval the vehicle gets locked automatically.

4. CONCLUSIONS

In this paper, we have proposed a novel method of vehicle theft avoidance. The theft is avoided by using ultrasonic fingerprint scanner. To open the doors the fingerprint of authorized person needs to be authenticated. Guests can register their fingerprint with the owner of the car so they become authentic users.

5. REFERENCES

- [1]. Fingerprint recognition - Wikipediaen.wikipedia.org
- [2]. www.androidauthority.com/how-do-ultrasonic-fingerprint-scanners-work-666053/www.androidauthority.com
- [3]. Intelligent Vehicle Theft Control using Embedded Systemresearch.ijcaonline.org
- [4]. How Does A Fingerprint Scanner Work — The Application Of Biometricsfossbytes.com

