

# Vehicle Security using Biometric Authentication, GPS and Door locking System

Ajay Mallinath Kumbhar<sup>1</sup>, Madhav Ramesh Godale<sup>2</sup>, Payal Rajendra Jagtap<sup>3</sup>, Amruta Tatya Misal<sup>4</sup>,  
Prof. Sushadevi Shamrao Adagale<sup>5</sup>

<sup>1,2,3,4</sup>Computer Engineering, Trinity Academy of Engineering, Pune, India

<sup>5</sup>Faculty of Computer Engineering, Trinity Academy of Engineering, Pune, India

## Abstract

*With the rapid growth of the economy, people have become more conscious about the prevention of vehicle theft. Several vehicle security systems have been developed in the past year, but these systems had fewer features. The only way to protect our belongings by using their own unique id, which gives them highly protection. That highly protection is possible by using the Bio-metric and face recognition authentication. Theft protection is also very important as traditional vehicle security systems require multiple sensors and are expensive. When a vehicle is stolen, it is difficult to recover. In this paper, we provide fast, easy-to-use, clear, reliable, economical and reliable fingerprint recognition techniques to protect the vehicle from unauthorized access. Global System for Mobile (GSM) communication technology is used to communicate the status of the vehicle to an authorized person (owner). If the person is certified, their vehicle can be accessed. Using GPS and GSM technology, it would be the cheapest method of tracking vehicles, and would also serve as an anti-theft device. This is an embedded system that uses the Global Positioning System to locate and track any vehicle.*

## I. INTRODUCTION

Currently, the Vehicle Tracked System is the newest technology in the lives of the universal population. A vehicle tracking system is combined with software that automatically locates individual vehicles. Its collects data from a spacious image of the vehicle exact places. In modern vehicle track and detecting system commonly used in GPS and GSM. its for locating the vehicle. he GPS will obtain the coordinates between alternative vital data from the satellites. In the globalized era, the following framework is highly critical. The system is mainly based on microcontroller consisting of a positioning system (GPS) and a global mobile communication system (GSM). This system utilizes Arduino framework on a compatible module with GPS and GSM. GPS cannot watch anyone and anything lately following systems square measurement. In the last few years, technology has improved rapidly and it is very convenient for the usual individual to use a following device. This technology has been introduced to the everyday life of ordinary people by vehicle systems. Today the square GPS used in a number of equipment, such as cars, ambulance crews, jets and cop cars, calculate common sights on emerging economies' highways. All quantum computing help after the location and place of the car.

Fingerprints, iris scans, facial recognition, voice tone, typing patterns, mouse movements, and Internet usage are all examples of biometric security. Because they are universal, specific, measurable, and documentable, these identifiers are highly prized. Users can't forget or misplace their biometrics, unlike passwords, KYC replies, or authentication tokens. Biometric technology is a technique that relies on the physical presence of the individual being identified.

## **II. LITURATURE SURVEY/BACKGROUND**

In this section, we will detail the various studies conducted by other researchers and the approaches proposed for assessing vehicle security trends, The purpose of this paper is to explore how to protect the car from unauthorized individuals by employing a unique id, finger print authentication. In place of the traditional door locking method, a finger print scanner is used to lock and unlock the doors. As a result, the car owner is better protected. Another solution is being developed that uses a GSM module to send a message to the car owner's mobile phone.

The Raspberry Pi 3 CPU is in charge of the entire system. Amritha Nag, Nikhilendra J N and Mrutyunjay kalmathg, VIT university. They have a system with IoT based that describes about a reliable traditional security system using Raspberry Pi under face recognition and detection, image capturing.

Face Recognition and detection in real time by using Open CV python module is used. This system or device is installed in vehicle. By using mobile application to recognize the face and compares face within their data to checked whether, that user is an automated owner or not. If condition is true, unlock the vehicle, otherwise vehicle remain locked. If any person trying to break or damaging the device, it will automatically send the message and call to responsible person. This system secures vehicle from theft, as well as allowing user to view the theft details and saving data in USB.

Z. M. Win and M. M. Sein. This section deals with the design and development of an Embedded smart car security and theft control system for an automobile, which being used to provide security and prevent the theft of a vehicle, which consist of a fingerprint detection systems, GPS(Global Positioning System) module a GSM (Global System for Mobile Communication) module and control platform.

Number of articles on the development of the car with GPS and GSM modems worldwide. The gap GPS is useful for reliable proximity to a PPP organization. GPS evaluation is overcome in screw-up sources. It addresses the creation of a steady visual global vehicle protection scheme and the opportunity for an extension point of integration is added.

### III. METHODOLOGY

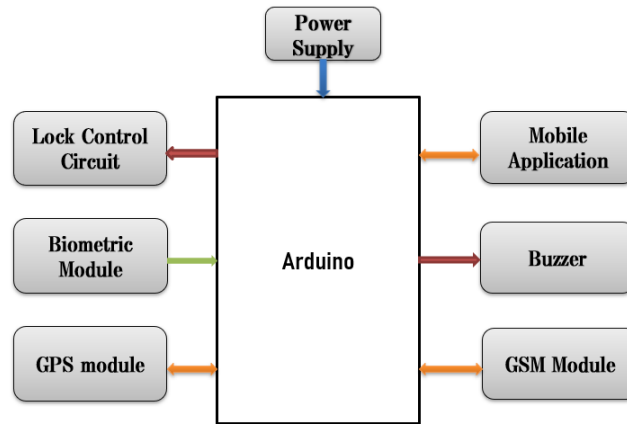


Fig.1 Circuit Diagram

#### A. Lock Control Circuit

An electronic lock is one of the locking devices it can be operates only an electric current, the electric lock has been self-contained for sometimes with the help of electronic control. It can assemble mount directly to the door lock.

#### B. Bio-metric Module

The fingerprints for matching purposes generally require the comparison of several features of the print pattern. These include patterns, which are aggregate characteristics of ridges, and minutia points, which are unique features found within the patterns.

#### C. GSM Module

GSM Module can be communicated with the computer. The GSM architecture is used in Computer and mobile communication. The GSM used to send and receive the message. It is a wireless communication system between the Raspberry Pi Processor to Mobile phone and requires a SIM (Subscriber Identity Module) card like as mobile phone to achieve communication with the network.

#### D. GPS Module

A GPS (Global Positioning System) the main features of GSM is a subscriber identity card. GPS is a navigation device, in this device that is capable of receiving information through satellite. GPS is used to track the place. Its interconnection between earth and satellite communication. To send/receive the information from the satellite.

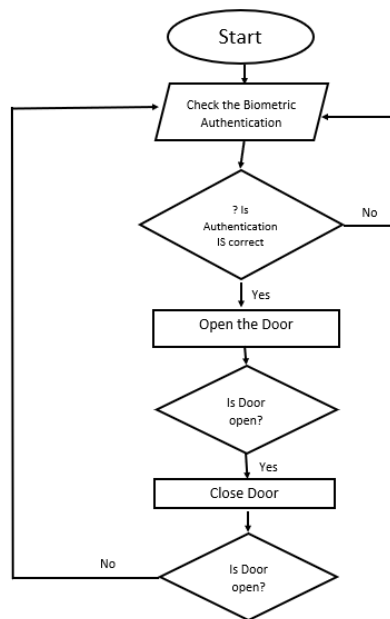
#### E. Buzzer

Buzzer is the device which makes beeping noise, this type of buzzer required some kind of oscillator to drive it you apply a DC voltage.

**F. Mobile Application**

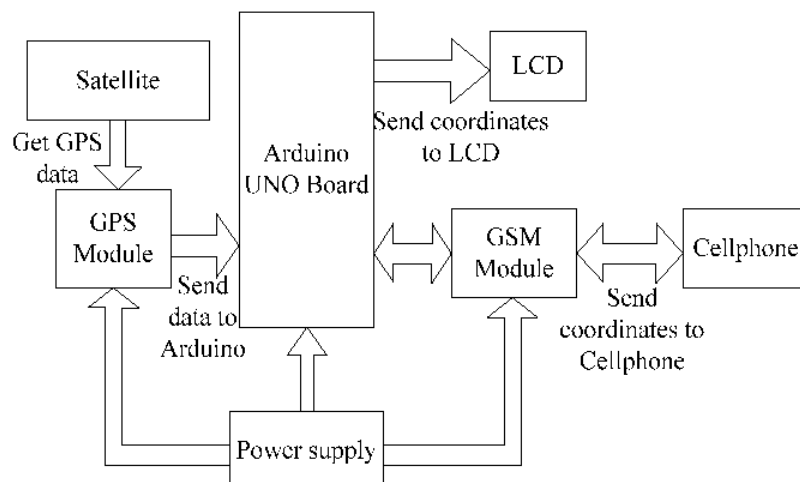
Mobile application is used for recognize the face; this application is used to require the implementation of facial recognition feature. This system works in various method, you just swipe to unlock the device. This system also known as Bio-metric Artificial Intelligence based on mobile application.

**IV. FLOWCHART**



**Fig.2 Flowchart of Bio-metric Authentication**

As shown in above fig 2 as the system starts, at first, it's starts verifying the Bio-metric Authentication like face and fingerprint. If the Authentication verifies or matched then it gives access means it opens the door of the vehicles otherwise it denies the permission and it gives more try to user/person to try again. After verifying the bio- metric it opens the door and if the doors are already opened then the system closes the door.



**Fig.3 Flow of GSM and GPS Module**



As this is our first part of system then second part is when the vehicle is theft that time, we have implanted GPS for tracking the vehicle and with the use of GSM the user will get the message or notification. In this expected work, GPS misuse and GSM creativity are used to pursue a new vehicle policy and protection system. If the collaborators do not have an approval, the information is dissected and sent to the consumer via GSM. The information is not accepted. The location of the vehicle square measurement position is transmitted by GPS.

The core component of the car is by the Arduino control system. The engine speed is steadily lowered and contains an end. By abuse, the ideas reported in the paper collection of board choices can be allowed in a similar format. Vibration locator is used to detect a companion failure. As the yield voltage of the vibratory in exceeds top power level, the processor proceeds to screen the yield of the vibration identifier, and often stops the processor from detecting the failure that happens. Following a precise vehicle position and exits exactly guarded during this process, the prisoner cannot get out of the car in these points.

## V. CONCLUSION

Nowadays, the vehicles are least secured when it is stolen by thieves. By this work, which is presented in this paper, it is very easy to track the vehicle at a higher degree of accuracy, since it is based on GSM, GPS, face reorganization, and biometric technology. So, it is very much easy to get back the vehicle. The crux of the work is that the whole process is done at the least possible cost and it is almost accommodable to the practical application. In future, there is no doubt that all of the vehicles will be embedded with this unique kit.

In the upcoming days, there will be camera for face recognition, biometric, GPS, GSM and door locking technology. which will improve the quality and can solve the problems like security. Yet these technologies of upcoming generation will be commonly used in smart settings where computers and machines are more like supportive helpers. In this system we have seen different algorithm with their drawbacks and accuracy and we are going to use one algorithm with least drawbacks and high accuracy in our system in automobiles.

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