

## A Survey on Vehicle Security System using IoT

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**Abstract:** With the development of economy, vehicle grows rapidly then people are getting more concerned about vehicle theft prevention. In past year also many vehicle security systems are developed, but that systems had less facilities. Our system is to utilize wireless technology successfully for car condition and use low cost Bluetooth module. Biometric device is used to scan finger, if fingerprint is matched then only car door will open otherwise not. To avoid collision we need to calculate distance between obstacle and vehicle and sending alert to user, for this purpose ultrasonic sensor is use. Also, car will be operate if user wears seat belt. If there is window thief, IR sensor detects the thief and sends signal to the microcontroller. This controller is connected to Bluetooth device and alarm system then it sends signal to dashboard and finally alert signal sends to authorized users mobile phone.

**Key Words:** Global Positioning System, Android app, GSM, Micro-controller, IOT.

### 1. INTRODUCTION

More than 40,000 motors are stolen in our country. Each 12 months, specifically in the metropolitan towns and much less than 15,000 cars had been traced as consistent with the reports posted by means of National Crime Records Bureau, Ministry of Home Affairs, Government of India, New Delhi. As the details provided by Government of India, there are three.90 lakhs injuries within the year 2000; 78,911 were killed and 3,99,265 have been injured. Accidents are quite not unusual on Indian roads and the equal is likewise at the upward thrust with the speedy urbanization and unprecedented growth of motor automobiles. In India, over eighty,000 folks die in the street injuries annually, over 80,000, 1.20 million are injured severely and about 3,00,000 disabled permanently.

In last a few year, we have a look at the drivers fatigue using and car robbery interest which reasons social actual time hassle like accidents and lots of extra risks situations.[3] Multiple anti-robbery gadgets were advanced to provide safety to automobile these days, however the result remains disappointing in view that all varieties of devices have its drawbacks. Domestic and distant places car anti-robbery merchandise are technologically categorized into 3 classes: mechanical lock devices, automobile alarm system, and car monitoring/healing systems, especially aiming at preventing cars to be broken in and driven away.[6] In this anti robbery safety system for automobile Using arduino is fingerprint based totally, in that consumer

first off experiment fingerprint to open the door. If the consumer fingerprint suits with database the best consumer is permitted to open the door. If unauthorized person seeking to open vehicle door then alert message ship to the owner of the auto, after that owner can take action. IR sensor is used to locate item. GPS tune the live area of car. Ultrasonic sensor hit upon the gap among car and obstacle.

### 2. LITERATURE SURVEY

- 1. VEHICLE TRACKING AND ANTI-THEFT SYSTEM USING INTERNET OF THINGS**, The system developed effectively provides an application of connected devices or Internet of things in Transportation. The Modules like GPS and GSM are help us to track the location of vehicle using the GPS antenna in the vehicle. Since, use of this open source technologies makes system cost effective and easy to understand. Mobile network providers provided the security standards and therefore security is very good.[6]
- 2. With the help of Raspberry Pi, monitoring and tracking becomes possible**, System plays an important role in monitoring and tracking vehicle live. Whenever there is vehicle theft situation or vehicle's accident situation occurs, the proposed system provides the vehicle's current location, speed to the vehicle owner's mobile. One of the benefit is live tracking of vehicle earlier. There is concern that provision is given to a students safety as per situations.[3]
- 3. Handling of data is done by GPS device: Vehicle tracking is reflecting scenario**, System reflecting the tracking scenario of a vehicle by using SPSS. The position of vehicle in the form of latitude and longitude not only analyzed through analysis report table but also tracked by line graph with respect to time. The movement of vehicle in the form of speed not only analyzed through analysis report table but also tracked by line graph with respect to time. Various inputs regarding efficiency in tracking task has been identified during the data analysis.[4]
- 4. Advance technologies like GPS/GSM/GPRS and android application are possible**, this paper has described the design and implementation of our vehicle tracking system. Server and smartphone applications make the tracking system more

beneficial. In this work, the in-vehicle device is composed of a microcontroller and GPS/GSM/GPRS module to acquire the vehicle's location information and transmit it to a server through GSM/GPRS network.[5]

### 3. DISADVANTAGES OF EXISTING SYSTEM

1. Existing system fails vehicle tracking by GPS.
2. Not provides the facilities like fingerprint reader and face recognition.
3. Unable to provide smart alert for system protection.

### 4. PROBLEM STATEMENT

In today's comfort world a various vehicles are available some of them expensive, as the no of urban vehicle grows rapidly and similarly the security issues are also increases. For this purpose vehicle security is provided using an IoT.

### 5. PROPOSED SYSTEM

**Window Obstacle Module:** This module consists of an IR (infrared) sensor which is placed on the window of the car. This module will detect any obstacle which hinders the operation of window glass. System ensure that if someone puts hand on the window it will be detected by the IR sensor and it automatically closes the glass of the window.

**Accident Avoidance:** For an accident avoidance system, if there is an any object or obstacle then sensor are able to detect it. Ultrasonic sensors are used for, which help to avoid the accident like situation. This sensor works by emitting sound waves at a frequency too high for humans to hear, then wait for the sound to be comes back, calculating distance based on the time required. Ultrasonic sensor is in front side of the vehicle which are able to measures the distance. It detects, if threshold distance is greater then vehicle will stop.

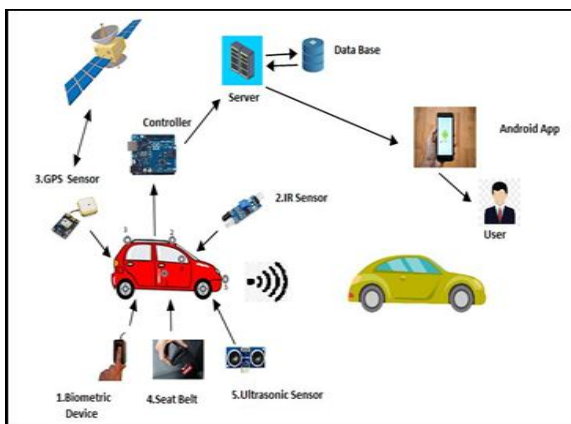


Fig -1: Propose System Architecture

**Biometric Door Lock:** To avoid vehicle theft proper door lock must be ensured. Generally a key is used to lock/unlock the doors, which is not so effective to secure the doors. Therefore, we are using a finger print based locking system to ensure that only an unauthorized person will not have the provision to lock/unlock the door. Whenever a person placed his/her finger on this sensor the sensor will detect the prints and generates a signal for the controller which checks the input finger print in the database. If input finger print matches with an existing print, controller sends a signal to lock mechanism and door will be opened.

**Location Tracking:** live location of vehicle is tracked in most reliable way. So, thereby vehicle cant be moved to somewhere. By the use of GPS device there is proper development of system. It is attached to the vehicle it continuously send location data to the controller and alerts the user about location through an android app.

**Safety Engine Ignition System:** Driver safety is a major concern. In safety point of view vehicle is integrated with a seatbelt, but it is observed that people usually never wear seatbelts at all due to which accident happens and cause harm to driver. To avoid these happenings we have developed a safety system to ensure that user must wear seatbelt in order to start the engine.

### 6. ALGORITHM

System processing steps:

Inputs- (IR sensor value, Finger i/p, Ultrasonic sensor data, GPS i/p)

Outputs-(Glass operation, Door operation, Buzzer, Vehicle tracking)

Pseudo Code:

```

Start
while (close window btn on==1) {
if (ir val==1)
{ push window glass;
}
else
{ stop operation;
}
if (finger ip==stored id)
{ open door;
}
}
    
```

```
else
{ buzzer on;
send location;
}
if( vehicle motion ==1)
{ time taken=read(ultrasonic data);
dist= (time taken*0.034)/2; //distance calculation
if (dist==safe dist)
{ vehicle motion=on;
} else
{ vehicle motion=off;
}
}
```

## 7. CONCLUSION

System provide high level security and cover disadvantages of existing system. Enables user safety by seat belt compulsion, to open car door fingerprint is used. Ultrasonic sensor is used to avoid accident, as sensor detect distance between vehicle and obstacle. It provides security from towing of automotive and stealing through the window.

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