

# Smart Way to Catch the Theft Vehicle and Theft Person using RSSI System

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**Abstract** -This research paper provides a possibility to track user position which is operating in any indoor or outdoor scenarios with the help of single device and also minimal error to track. This paper uses Received Signal Strength Indication technique for theft vehicle detection in a smart manner. RSSI technique first calibrates the RSSI coefficients which is deterministic in phase and also the position is estimated using probabilistic approach in phased manner. This technique is a low complexity RSSI approach which minimizes the fluctuation of radio signal received from each reference when the node under consideration shows movement. The results show that the time position monitoring system are more accurate and also feasible.

**Key Words:** RSSI, Position, Vehicle, Arduino

## 1. INTRODUCTION

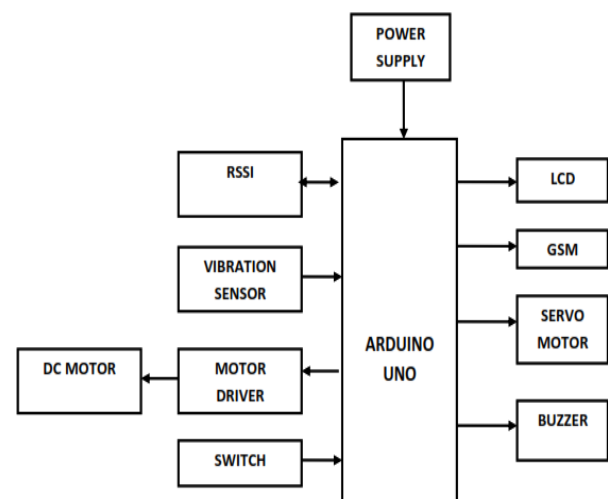
Wireless sensor networks (WSN) have gained importance in communication of information from source node to destination node for transfer of information depending on applications. Received Signal Strength Indicator (RSSI) [1] is the ability to observe a signal such as distance in a WSN, from a particular access point which can also be in the form of router. RSSI based concepts can be used to observe whether the signal is below a specific threshold level for sending a signal. RSSI is also used as metric for localization in indoor and outdoor environments for zigbee based networks of wireless sensors [2] and also in target-based localization [3]. Further in other applications such as smart toll gate automation [4], and also in Bluetooth oriented RSSI algorithm [5], for robots which are mobile [6] it can be employed. In Microwave communication systems [7] which operate at very high frequencies microwave components can be useful for various automation, medical [8], IoT based microwave applications and wireless sensor networks [9] based applications.

In this research paper, there is an Arduino UNO [10] microcontroller which acts as brain of our system and therefore, the entire system program is stored in it for wireless sensor networks [11] and its allied applications of wireless communication [12]. There are two units, the

vehicle unit and owner's unit. The vehicle unit has one hidden switch only known by owner, if the switch not turns and person tries to access the vehicle then, once the distance between owner's unit and vehicle exceeds certain limit, then the DC motor will stop to show as vehicle stops. Servo motor will actuate vehicle doors to lock. The GSM will send SMS to police and owner. Vibration sensor is to detect if the theft person breaks the vehicle door. All these statuses are shown in LCD in the section 2 and section 3 of this research paper.

## 2. PROPOSED SYSTEM

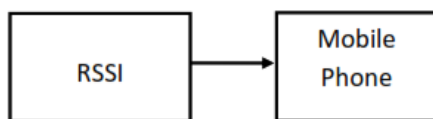
In existing system, the car has electronic key or card-based security system is used to access the vehicle. Mainly this system doesn't have technology to locate theft person. So, in the existing systems there is no assurance of locating the theft person and he can easily escape. Theft person may hack the security system of the car. In the proposed system, in this system, RSSI technology used to locate the vehicle within certain distance limit. Here, theft vehicle and theft person are located near around owner. So, easily theft person will be caught. By using GSM, the message will be sent THEFT ALERT to the owner and police. In this system, there are two units, the vehicle unit and owner's unit.



**Fig.1 Proposed System – Block Diagram – Receiver Section Vehicle**

Fig.1 shows the block diagram receiver section vehicle, in the vehicle unit there is one hidden switch which is only known by owner. So, the owner will turn the switch to Drive Mode to access it. If the owner wanted to deny the access of car and prevent the car from the theft, then owner needs to switch the hidden switch to Protected Mode. Now when the car is in protected mode and person tries to access the vehicle then, the signal strength will be continuously observed. The signal strength will be categorized in 3 zones: Green zone (Safe zone), Yellow zone (Mid zone) and Red zone (Danger zone).

Once the distance between owner’s unit and vehicle exceeds certain limit, the signal strength decreases to Red zone. Then the DC motor will stop to show as vehicle stops. Servo motor will actuate vehicle doors to lock. The GSM will send SMS to police and owner. Vibration sensor is also used to detect if the theft person breaks the vehicle door and it will activate the Buzzer to alert about the theft. And all these status will be alerted via LCD Display.

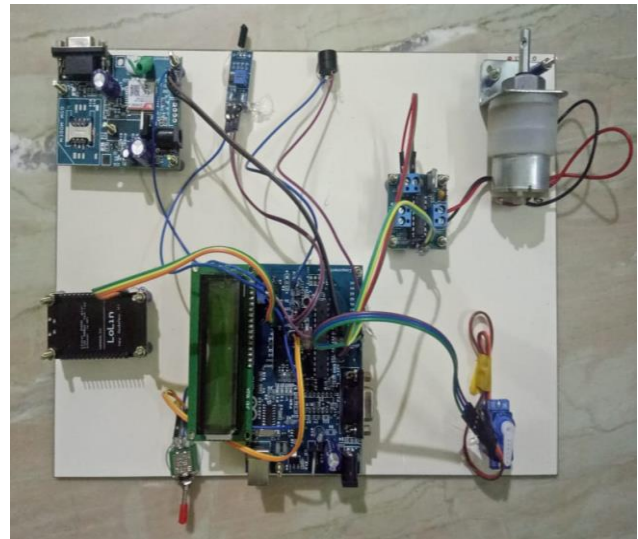


**Fig.2 Proposed System – Block Diagram – Transmitter Section Vehicle**

In Fig.2 Transmitter section, the Received Signal Strength Indication is connected to the mobile with the help of mobile hotspot. Once both are connected and signal strength is continuously measured. The signal strength is categorized in 3 zones: Green zone (Safe zone), Yellow zone (Mid zone) and Red zone (Danger zone). This will continuously inform the status of the car to the owner.

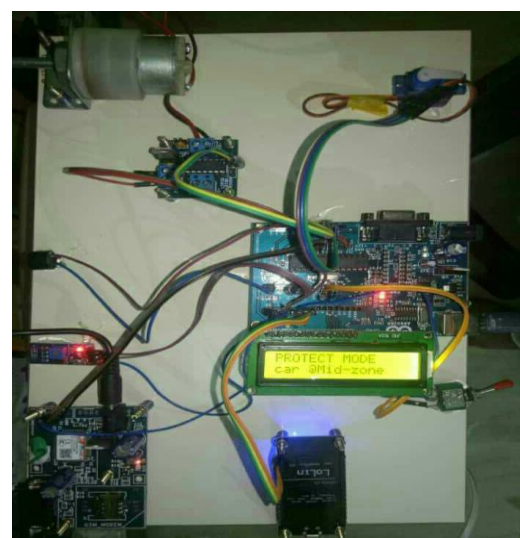
### 3. RESULTS AND DISCUSSION

The components used in this research system are Arduino Uno, LCD Display, DC Motor, Buzzer, Switch, GSM, GPS, RSSI, Vibration Sensor, Arduino IDE for theft vehicle observation and the corresponding person.



**Fig.3. Circuitry System for Vehicle Theft Detection**

In this proposed system, RSSI technology used to locate the vehicle within certain distance limit. Both the theft vehicle and theft person are located near the owner. The theft person will get trapped inside the car so that the theft person can't escape out of the car and get locked inside. With the help of GSM, alert message will be send to the owner and police. The chances of the theft vehicle will be reduced. This system has fast response in environment, it is eco-friendly and a wireless technology. In overall, this proposed system is the best and smart way to catch the theft vehicle and theft person as shown in Fig.3 and Fig 4 of this research paper.



**Fig.4. Circuitry System for Mode of Operation Vehicle**

### 3. CONCLUSION

This research paper provides effective and efficient approach for theft vehicle detection and also the corresponding person for vehicle safety for commercial and domestic applications. This research paper can be used for developing applications for automation, IoT and other applications for vehicle to vehicle communications for automation and industrial sector fields.

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