



## VEHICLE THEFT DETECTION AND TRACKING SYSTEM

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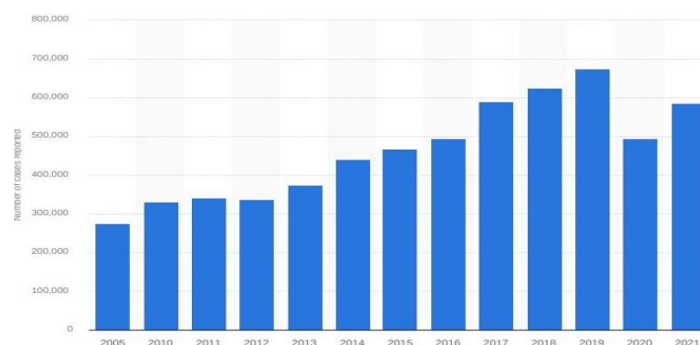
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**Abstract:** Automobile industry is one of the major growing sectors in India. As a result, number of vehicles are increasing rapidly every year. In the mean while vehicle theft is one of the major problems faced by the owners of the vehicle. To address this problem, we come up with a solution which detects the vehicle theft and also alert the user about the theft. This count is increasing theft is universal problem in order to solve this problem most advanced IOT technology is used by vehicle theft detection and locking systems to help users recognize when a vehicle is being stolen and to enable controlling mechanism technology. The incidence of automobile thefts is exponentially increasing in the modern world. Criminals are getting smarter all the time and have developed applications that target the current vehicle safety system. Vehicle theft has grown to be a serious problem that needs to be tracked down and stopped. By using a few expensive items, such as an ignition key, the suggested solution gets around most of the problems while increasing cost effectiveness and decreasing complexities. The extension for operating systems that remotely lock the vehicle engine and detect theft is part of the suggested solution. The user starts/stops the vehicle using the android application or the ignition key in the suggested technique, and the application then tracks the vehicle's precise location.

**Key words:** - IOT, TRACKING, GPRS, L298N, IGNITION KEY

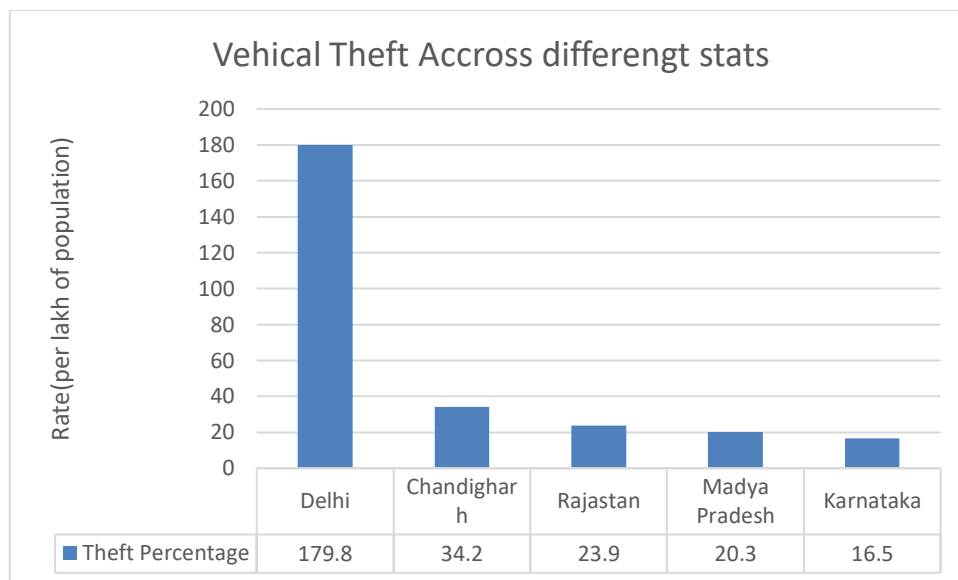
### I. INTRODUCTION

Automobile industry is one of the major growing sectors in India. As a result, number of vehicles are increasing rapidly every year. In the mean while vehicle theft is one of the major problems faced by the owners of the vehicle. To address this problem, we come up with a solution which detects the vehicle theft and also alert the user about the theft. Number of vehicle theft increases every year shown in below Figure which is approximately 53,00,000 thefts has been registered from the year 2010-2021 out of which 19.6% vehicle is recovered till 2018 and in the year 2019 vehicle theft recovery rate increases to 26% and 31.4% in the year 2021



Graph of yearly increasing in vehicle theft

The rate of Vehicle theft in different states shown in below Figure. The five most vehicle theft prone states in India are Delhi, Chandigarh, Rajasthan, Madhya Pradesh and Karnataka.

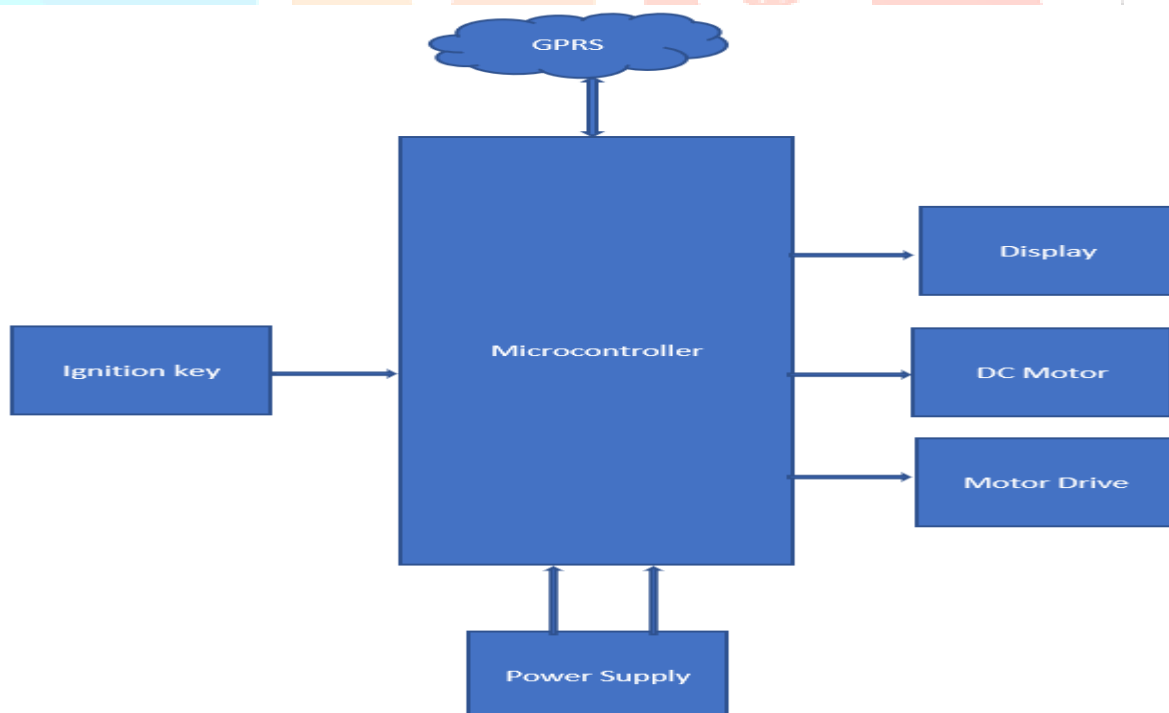


Graph of vehicle theft in different states

As shown in graph above Delhi is at first position with the greatest number of vehicle theft rate also Delhi is the state with the greatest number of crimes. Criminal activities such as kidnapping etc. So, the proposed system ‘Vehicle theft detection and tracking system’ helps in tracking the stolen vehicle with the location and this system will also help in tracing the location of the vehicle that is involved in criminal activities such as kidnapping at any given point of time. The proposed system also helps in securing the vehicle from any type of illegal or criminal cases. Followed by Delhi the vehicle theft prone states are Uttar Pradesh, Rajasthan, Maharashtra, and Karnataka. Solving most of these theft cases is very much difficult as it is difficult to track stolen vehicles without GPS tracker. So, the proposed system will increase the vehicle theft recovery rate using detection and tracking system.

**II. BLOCK DIAGRAM**

The main aim of this project to prevent theft of the vehicle thus general block diagram of our project will be shown in the figure.



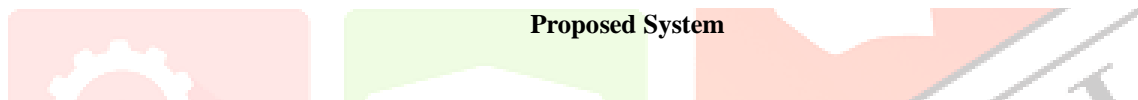
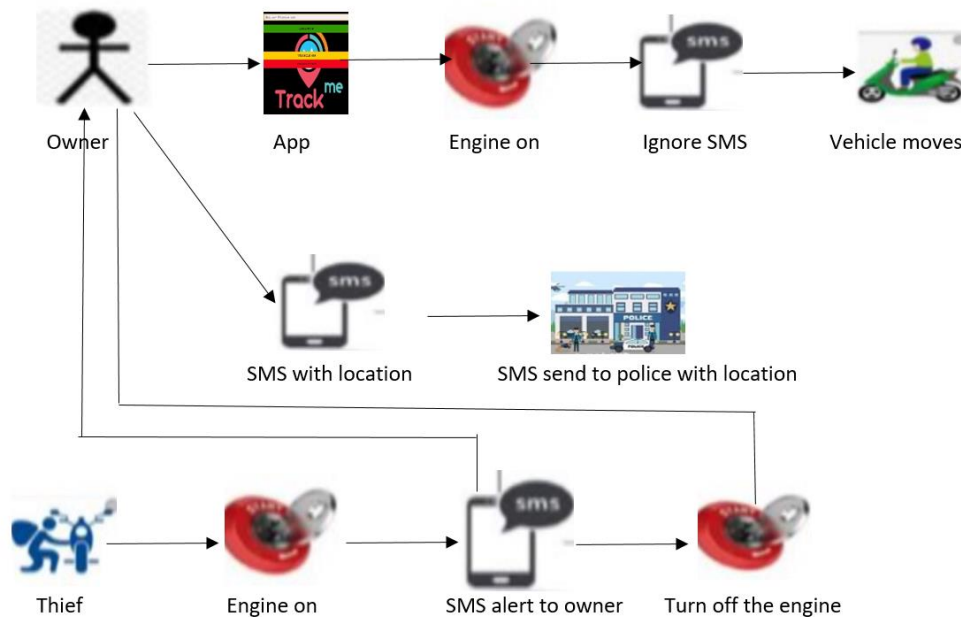
Block Diagram of the System

### III. PROPOSED SYSTEM

The system architecture of the proposed system is shown in Figure. The entire system architecture is divided into 3 modules owner, theft detection and rash driving detection.

• **Owner:** Owner starts the vehicle using the android application. Application consists of a “Vehicle ON”, “Vehicle OFF” and “LOCATION” options. When he selects “Vehicle ON” option, the vehicle starts. Once the vehicle is ON, the GPRS module sends an SMS to the registered mobile number notifying the owner that the “vehicle started using the android application”. Owner will ignore the message as he was the one to access the vehicle. Owner chooses “Vehicle OFF” to stop the vehicle

• **Theft Detection:** When the vehicle is accessed using the ignition key a message will be sent to the owner that “vehicle starts”. If it was an unauthorized access then the owner will use to android application to turn off the engine of the vehicle so that the theft can be prevented.



#### ANDROID APPLICATION PART:

The android application consists of the following modules

• **Vehicle ON and OFF Button:** This is used to start and stop the vehicle. When the "Vehicle on" button is used, vehicle is started & the owner receives a message that “Vehicle turn on”. Similarly, with "Vehicle off" button user can turn off the vehicle engine.

• **Location Button:** This shows the exact location of the vehicle at any given point of time.

• **Turn off Button:** This is used when the owner detects an unauthorized person. A message will be received saying “Vehicle starts”. When such a message is received the owner can turn off the engine of the vehicle with the help of the android application and prevent the theft of the vehicle. And reduces theft cases.

#### IV. ADVANTAGES:

- Prevents unauthorized person from stealing the vehicle.
- Helps in tracking the vehicle.
- Detection and notification will help in reducing vehicle thefts to great extent.
- Cost effective.
- High security can be achieved with the help of this application.

#### V. HARDWARE AND SOFTWARE REQUIREMENT

The hardware components used in the project decides the proper operation of the project. Thus selection and design of each components of the project shown in the circuit diagram. Plays an important role in proper working of the project. From the selection of ignition key to major products such as GPRS, microcontroller is very important in the design procedure. The table shows the hardware components required for the project along with exact model selected.

Since the project is based on programming the microcontroller, several software tools are being used throughout the project starting. The table 3.1 shows the software used along with its purpose. The coordination of both hardware and software is very much necessary in actual operation of project and in order to meet the objectives of the project.

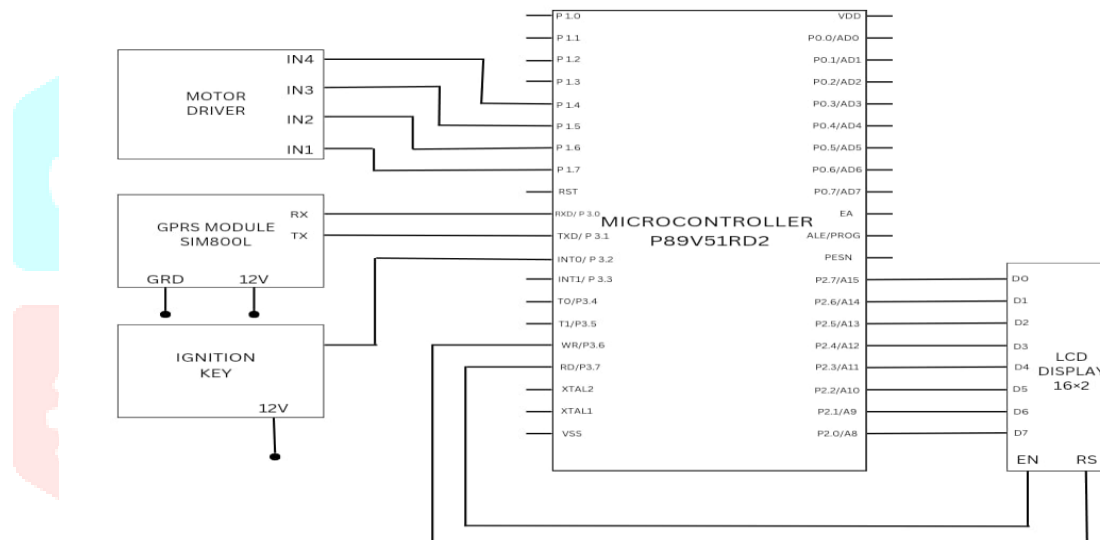
Software tools used

Sl.no	Software tool	Description
1	Keil software	Programming the microcontroller and simulating the program.
2	Willar programming software	Burning the program to microcontroller

Hardware components required for the project

Sl.no	Requirement	Component chosen
1	Power supply	12v
2	Microcontroller	P89V51RD2
3	Ignition	Normal metal key set
4	LCD display	16*2
5	Motor drive	L298N
6	GPRS module	SIM800L

VI. CIRCUIT DIAGRAM



Circuit diagram of proposed system

Components connected to microcontroller with their pin number

Sl No	Components	Connections
1	GPRS Module SIM800L	<ul style="list-style-type: none"> <li>RX (Serial receive) of GSM is Connected of TX (serial transmit) of microcontroller</li> <li>TX (Serial transmit) of GSM is connected to RX (serial receive of the microcontroller)</li> </ul>
2	L298N Motor drive	<ul style="list-style-type: none"> <li>IN1(input) is connected to p1.6 of microcontroller</li> <li>IN2 of motor drive is connected to p1.7 of the microcontroller</li> <li>IN3 of motor drive is connected to p1.4 of the microcontroller</li> <li>IN4 of motor drive is connected to P1.5 of the microcontroller</li> </ul>
3	Display	<ul style="list-style-type: none"> <li>EN (enable pin) of display is connected to p3.7 of the microcontroller</li> <li>RS (reset pin) of display is connected to p3.6 of the microcontroller</li> <li>D0 TO D7 Pins are connected to p2.0 TO p2.7 of microcontroller</li> </ul>
4	Ignition key	<ul style="list-style-type: none"> <li>1pin of ignition key is connected to p3.2 Of the microcontroller and other pin is connected to the 5v supply</li> </ul>

VII. WORKING

Ignition is in “off” condition until and unless users turn on the ignition key, an SMS will be delivered for owner once the vehicle is started. GPS module get switched on and start to work. Display will start to show the gathered data (latitude, longitude). Initialize GSM module open the installed app in the mobile phone.

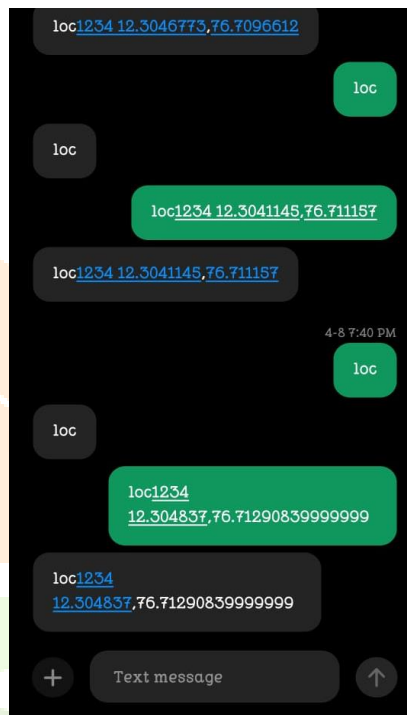
Theft vehicle, if somebody inserts the key and switched-on, GSM will send an SMS to the owner “Vehicle on” data also get detected by the longitude and latitude so that we can find the location exactly. The other benefits from this project are that the over speed detection. If the owner or thief riding the bike so fast it will send SMS to the owner phone. Then we can stop the vehicle and we can get the data that while vehicle exactly moving. The app it is available in play store where we can be installed without any changes, basically it is a free app GSM controller.

### VIII. RESULT

In this proposed project we developed a vehicle theft detection and tracking system. At the end of the research, we will be able to achieve the objectives stated

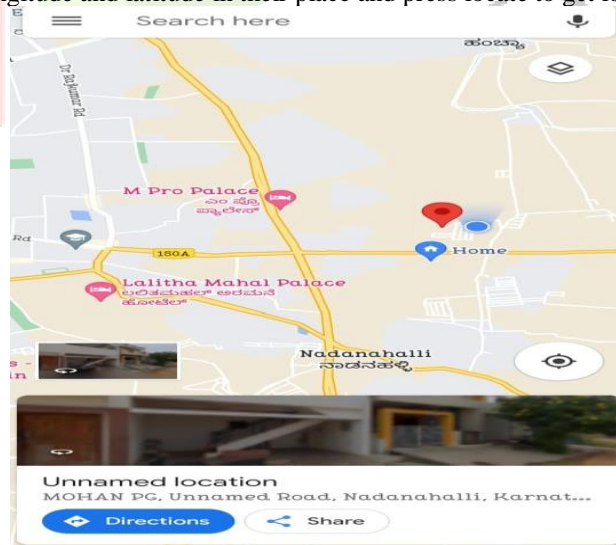
all the components interfaced to Micro controller which is a main part of the hardware The owner starts a motor by pressing a vehicle on button if motor cycle will start with the help of ignition key the micro controller will send a message to the owner tell him the car is turn on if turn on by himself or someone know him the owner will ignore the message, else he will press off button to turn off the engine and press location button to get location of the motor cycle and trace it

Press location button in the android app to get location and the system within motor cycle will send a message to mobile phone contain the motor cycle location as seen in figure.



Message of vehicle location

Then the owner should enter the longitude and latitude in their place and press locate to get location in the map as seen in figure



Location of the theft vehicle

### IX. CONCLUSION

The primary goal of this initiative is to promote and guarantee the car's safety and security. Our suggested solution offers protection and effectively detects theft at a very low cost since security systems become an inevitable necessity in life. This project's main goal is to use a mobile application to turn off the engine and avoid car theft also one of the main objectives of this proposed system is to prevent vehicle theft and track the vehicle location and then alert the owner of the vehicle via SMS about the vehicle theft and stop the engine through android application. The SMS is sent to the registered number or to the nearby police station which will help the owner in finding the stolen vehicle even easier with the help of police. This will help in securing the vehicle and also

increases the vehicle theft recovery rate. With the help of the tracking system the respective owner can get back their vehicle easily and also with low cost.

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