

# Implementation Of Vehicle Theft Detection and Identification System

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**Abstract** – In recent times property theft has become a major concern. Out of this vehicle theft tops the list and occurs often in all parts of the world. In light of this issue many technologies are evolving and new methods are developed in order to resolve this issue. The methods involved in vehicle theft detection have become aware to everyone including the burglars and they try to break the system and steal the vehicle. This paper proposes a system presenting a mechanism to minimize vehicle thefts. It also aims to acquire the image of an unauthorized person and transmit it to a remote location. The system provides security by sending an alert message as soon the vehicle is stolen or moved without knowledge of owner. System also offers location of the vehicle to the registered user. This provision for theft vehicle tracking is provided by GPS technology by sending location. GSM technology is used to send an alert message to intimate the owner when the vehicle is started. ESP32 Camera module is used to send the picture of the thief to the registered user.

**Key Words:** Vehicle Theft, GSM, Arduino, GPS, ESP32WIFI Module, ESP32 Camera

## 1. INTRODUCTION

Vehicle theft identification and detection system is based on Arduino. Its main aim is to reduce the vehicle theft to a great extent. Today vehicles are being stolen on a large scale and that is the reason why this system is being introduced [1]. The aim of this system is to track the vehicle, lock the vehicle and also to send the alerts and images to the owner mobile number and registered e-mail. Vehicle tracking system installed in the vehicle, to track the vehicle location and to stop the engine. When the owner starts the ignition of the vehicle by using key switch, then they also need to press the secret button with in the particular duration of time, 4 seconds to be precise. Then only this system will recognize the owner access. Otherwise, this system will detect vehicle theft and stop the vehicle ignition automatically and also continuously sends the SMS along with location details in the form of latitude and longitude values to the owner mobile through GSM, GPS [2]. If at all a theft occurred, this system will continuously send the images to the registered mail id through ESP32 CAMERA [3].

## 2. EXISTING SYSTEM

The existing system uses IoT based technology to detect the vehicle theft. The system also uses GPS for tracking the location of the vehicle [4]. An app named BLYNK is installed in the owner’s mobile to control the ignition of the vehicle and also remotely locking the vehicle when being stolen. SMS alert is sent to the user’s mobile using GSM when the vehicle starts [5].

## 3. PROPOSED SYSTEM

The proposed system uses Arduino based technology for detecting the vehicle theft. The system makes use of two buttons to recognize if the vehicle is being stolen. If the vehicle is theft mode, then the engine stops and SMS alert is sent to the registered mobile using GSM. The location of the vehicle is obtained using GPS [6]. ESP32 Camera module helps in capturing image of the thief and sending e-mail to owner.

## 4. METHODOLOGY

In this project, Arduino UNO is used for controlling the whole process, GSM module is used for sending and receiving messages. GPS is used to track location of the vehicle; LCD is used to check whether the system is ready and we use relay switch to switch on/off the engine based on the combination of buttons pressed.

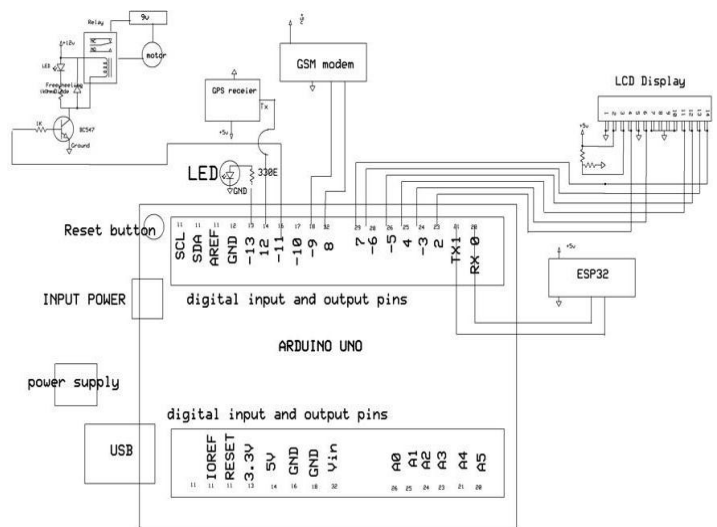


Fig. 5.1 Block diagram of System

Here, we have two buttons i.e., key and secret. If only key button is pressed then it means an unauthorized person is trying to use the vehicle and the engine does not start. When secret button is pressed within four seconds of ignition, it means authorized person is using the vehicle, hence the engine starts. When the vehicle detects unauthorized person, first the engine stops and location of the vehicle is detected by the GPS and then sent to Arduino. Location which is stored in Arduino is sent to owner via SMS with the help of GSM. The ESP32-CAM in the project will capture the image of the person and send it to E-Mail using SMTP library.

### 5. CONCLUSIONS

In this paper it is explained about anti-vehicle theft security system purpose and its design and working. GSM modem, GPS modem, ESP32-cam are the major components that are used to create and implement this security system for vehicles. This system focuses on theft alerting and tracking. Although Arduino microcontroller is used in this project, there still is future scope to further develop this prototype into smaller size by using the ESP32-CAM processor.

### 6.RESULTS

The Fig.7.1 shows the result of the alert message received via SMS when the secret button is not pressed and the vehicle goes into theft mode.

When the alert mode or theft mode is activated the ESP32-CAM automatically captures the picture of the person in the driving seat and sends the image to the owner's email as shown in the Fig. 7.2.

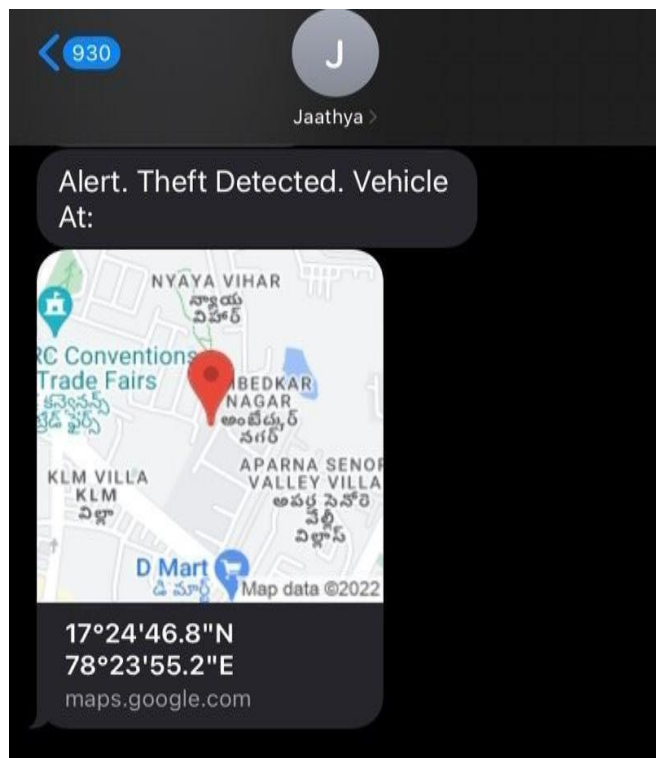


Fig. 7.1 Alert message received via SMS

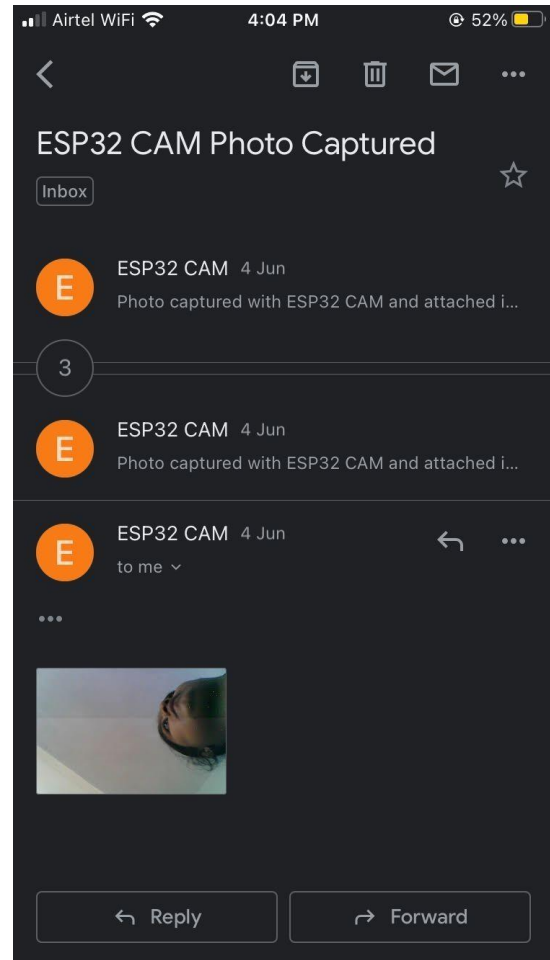


Fig.7.2 Image Captured by ESP32-CAMERA

Another sample of email received with the image captured by the ESP32-CAM is shown in Fig.7.3.

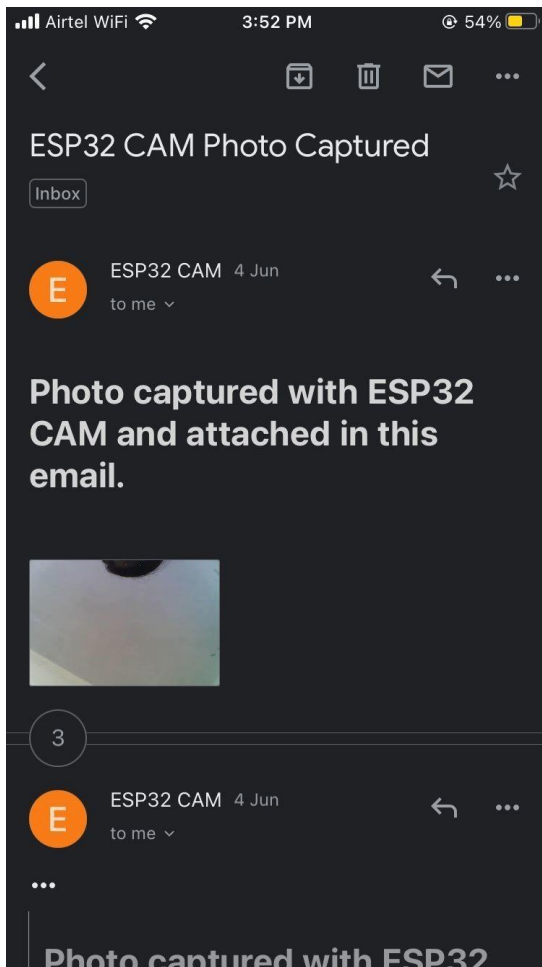


Fig.7.3 Image Received in E-mail

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