

AN IOT BASED VEHICLE THEFT DETECTION AND REMOTE ENGINE LOCKING SYSTEM

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ABSTRACT

An IoT based vehicle theft detection and remote engine locking system is GSM technology that helps the users to identify the vehicle in the theft mode and enables the controlling mechanism technique. At present day scenario, there are large number of vehicle thefts exponentially. Vehicle safety has become a serious problem as the occurrence of crime has increased. Criminals are becoming smarter and have reached the stage of applications present against the vehicles safety system. Vehicle theft has become a considerable issue which should be traced and prevented. Most of the limitations and cost-effectiveness are overcome by the proposed system. Also the proposed system reducing complications by making use of some high priced products like ignition key, microcontroller. In proposed method we have the additional feature for controlling mechanisms which remotely locks the vehicle engine and prevents the theft. In proposed technique, user can start/stop the vehicle either by using the android application or by the ignition key, which tracks exact location of the vehicle using the application. This paper presents a best anti-theft vehicle security system that integrates Global Positioning System (GPS), Global System for Mobile Communication (GSM) and Biometrics technologies (i.e., fingerprint) for user identification and authentication. Fingerprint device captures the fingerprints and matches the distinctiveness of every print scan by the device and compares it to the one keeps in its module or native system database.

Keyword: - GPS, GSM, Location identification, Theft alert, vehicle tracking, Vehicle theft detection, Remote engine locking system etc.

1.INTRODUCTION

The vehicle theft is become a major problem that the whole world is facing now. The issue of vehicle theft has increased rapidly, mostly at parks. To stop this issue, there is a need of theft alert system which helps to owner of the vehicle to ensure theft prevention and provide speedy identification of an unauthorized person who was trying to steal the vehicles or trying to damage our vehicle. The theft alert system used GPS (Global Positioning System) and GSM (Global System for Mobile) which are placed in vehicle to communicate with vehicle's owner mobile phone. In GSM technology, the communication build either by an SMS or calling but we prefer the communication via

SMS (between owner's mobile phone and GSM). The communication established include – Sending an SMS by GSM to owner's mobile phone to provide all information about vehicle's. The GPS technology is used here to provide the exact location of vehicle to the vehicle's owner. It means that whenever an unauthorized person will try to steal our vehicles, then we can easily detect the location of theft with vehicle by using the GPS technology and catch that theft very easily

In this system we are going to use two keys to open the vehicle lock, one is the owner's key and other is direct key. Owner key is used by owner and direct key is used by unauthorized person. Whenever the unauthorized person used direct key, the alarm become active and give the beep sound which indicate that the thief is detected. At the same time a warning SMS is sent by GSM to registered mobile number of the vehicle's owner.

After receiving the message, the vehicle's owner sent a message to remotely locked the engine, after that the engine is turning off and the motor of the vehicle cannot start without permission of password. In this way, an IOT based vehicle theft detection and remote engine locking system helps in preventing the criminals from stealing vehicles.

2.PROBLEM STATEMENT

The Problem statement of this project is that, once the vehicle is being stolen, the owner of that vehicle cannot track and lock their vehicle. The chances to get their vehicle back are very rare and it is very difficult to get that vehicle back. It is very difficult to track the vehicle when there is no evidence. So, this system will track and monitor the vehicle's exact location using the android application and remotely locking the engine of vehicle. In simpler terms, a "vehicle tracking system" has been recognized as one of the most effective ways to prevent vehicle theft or losses. It usually relies on GPS technology to accurately determine the exact location of a vehicle. So, we make use of GPS and android based smart phones for improving this system.

3.EXISTING MODEL

The existing technology mainly uses alarms or beepers and biometrics to detect the theft in vehicle. The price of these commercially available products are very high. Using a buzzer will help the owner of the vehicle to prevent theft in nearby parking condition. If the vehicle is parked far away it becomes very difficult to prevent the theft and hence using buzzers is not effective technique to prevent our vehicle from the theft. In existing systems the fuel lines are cut off as soon as theft is detected, this might be dangerous at times.

3.1. DRAWBACKS OF THE EXISTING SYSTEM

In existing system we can only detect if the vehicle is stolen but cannot lock the vehicle and any person with the ignition key can start the vehicle. It is highly costly and cannot be afforded by everyone.

4.PROPOSED SYSTEM

- The projected system is created from an identity verification unit (i.e., Fingerprint scanner) that is proposed for verifactory the users of the vehicle by matching the captured fingerprint with predefined fingerprints within the information.
- GPS receiver receives the situation knowledge like latitude, altitude and median of a vehicle.
- This knowledge is often transmitted to the mobile device or the user through GSM network.

5.HARDWARE REQUIREMENTS

- Arduino Uno
- Fingerprint Sensor
- GPS
- GSM
- Relay
- Microcontroller
- LCD Display

6. BLOCK DIAGRAM

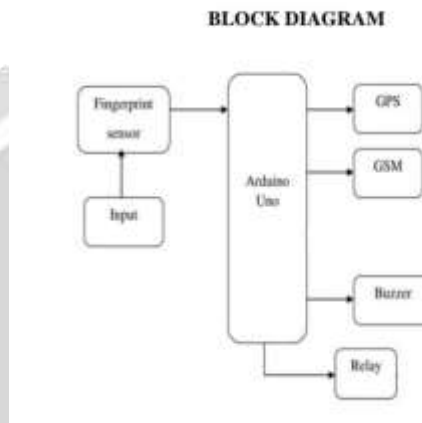


Fig. Block Diagram Of Vehicle Theft Detection & Locking System

1. Microcontroller

Microcontrollers play very important role in an IoT-based vehicle theft detection & remote engine locking system. They are also called as the "brains" of the system, responsible for interfacing with sensors, collecting data, processing information, and controlling the IoT devices.



Fig. Microcontroller

2. Arduino IDE

The Arduino IDE allows you to write C/C++ code to process the data collected from the sensors. The Arduino IDE is used to write a code in C or C++.



Fig. Arduino IDE

3. Relay

A relay is an electrically operated switch. Relays frequently employ an electromagnet to activate a switch. Relays are used when there necessary to control a circuit by a separate low signal, or when there are several circuits must be controlled by one signal.



Fig. Relay

4. GSM Module

GSM stands for Global System for Mobile Communication. To transmit and receive information on a cell phone is easier by using GSM module. The GSM module has an antenna for accepting network signals through the user's mobile phone. To facilitate communication, this GPS system is equipped with AT instructions. The Transmitter (TX) and Receiver (RX) pins which is employed to communicate serially with the microcontroller. AT instructions are used to verify the SIM state, enhance signal strength, and ensure connectivity is established.



Fig. GSM Module

5. GPS Module

GPS stands for Global Positioning System. GPS module is a navigation process that monitors the precise location of the device or a location. GPS enable us to pinpoint the exact position of the gadget which reducing the risk of robbery.



Fig. GPS Module

6. Fingerprint Module

A fingerprint sensor device is connected to Arduino uno board. Fingerprint sensor is operated by an Arduino uno board in this setup. The user can register his fingerprint in the ATmega2560 microcontroller using the Arduino IDE.



Fig. Fingerprint Module

7. CONCLUSIONS

The most important objective of this project is to ensure the safety and security of the vehicle. As security systems are becoming an unavoidable necessity in life, our proposed system provides safety of vehicle and detects theft efficiently at a very low cost. The main purpose of this project is to prevent vehicle theft and to lock the engine. The proposed system mainly aims to provide a low-cost theft detection system. Also the proposed system aims to safeguard their vehicle from theft.

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