Anti Theft Vehicle Security System
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Abstract:
Stealing the vehicle is the major threat to car or vehicle owners. Nowadays, it is increasing day by day. When a vehicle is stolen, it becomes hard to locate and track it, which considerably decreases the chances of recovering it. Nowadays rate of vehicle theft is very high all through the world and the situations are even worse in developing country. Therefore, protection of vehicles with an intelligent, reliable, effective and economical system is very important. The existing technologies for vehicle security have a number of limitations including high false alarm rate, easy deactivation and high cost. In this research an Anti-Theft Vehicle Security System (ATV2S) has been design and implemented utilizing sensor-network system which employ Global Positioning System (GPS) and Global System for mobile communication (GSM) technology to track the vehicle. The cutting edge technology of ATV2S is capable to protect, monitor and track the vehicle even within a minute.

Keywords: GPS, GSM, Web Cam, Android.

I. INTRODUCTION
Vehicles have become an essential element of our everyday life. Unfortunately, vehicle theft is also increasing day by day. A report prepared by the National Insurance Crime Bureau states that approximately 1.3 million automobiles were stolen in 2003. In 2003 the rate of the vehicle theft was held steady at about 433 cars per 100,000 people [1].

This scenario is even worse nowadays especially in third world country. Vehicle tracking systems are commonly used by fleet operators for fleet management purpose such as, dispatch, on board information, routing and security. Other applications include monitoring driving performance, such as an employer of an employee, or a guardian with a young driver. Vehicle security system can be found in consumers vehicles as theft prevention and retrieval device are normally useful after the incident and they are expensive too.

Police and Security department can track the signal created by any tracking system to locate a theft automobile. But for country like India, Bangladesh where majority of the stolen vehicles is very hard to recover because they are dismantled very quickly and sold at black market. In this case anti-theft tracking systems developed by different researchers and companies are expensive and also create false alarm. Hence this research is developed an Anti-Theft Vehicle Security System (ATV2S) with preventive features.

II. METHODOOGY
The below presented system provides a prototype design of a vehicle tracking and anti-theft system for protecting a vehicle from any intruder by using GPRS/GSM technology. An abstract idea for controlling the vehicle’s ignition also proposed there without proper implementation details.

A notebook with Google Earth is used for monitoring the vehicle’s location and its status. A Google maps based Smartphone application would be another alternative to replace the task that the notebook performs.

III. SYSTEM REQUIREMENTS
A. Hardware Requirements
1. Raspberry Pi 3: The Raspberry Pi is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to promote the teaching of basic computer science in schools and in developing countries. It does not include peripherals (such as keyboards and mice) and cases. However, some accessories have been included in several official and unofficial bundles.
2. **GSM Module:** GSM (Global System for Mobile communications) is a standard developed by the European Telecommunications Standards Institute (ETSI) to describe the protocols for second-generation digital cellular networks used by mobile devices such as tablets.

3. **GPS:** A GPS navigation device, GPS receiver, or simply GPS is a device that is capable of receiving information from GPS satellites and then to calculate the device's geographical position. Using suitable software, the device may display the position on a map, and it may offer directions.

4. **Web Camera:** A webcam is a video camera that feeds or streams its image in real time to or through a computer to a computer network. When "captured" by the computer, the video stream may be saved, viewed or sent on to other network

5. **Lock:** This electronic lock is used to give the demonstration of engine lock when it is theft.

6. **Smart Phone:** A smartphone is a class of mobile phone and mobile computing device. They are distinguished from feature phones by their stronger hardware capabilities and extensive mobile operating systems, which facilitate wider software, internet (including web browsing over mobile broadband), and multimedia functionality (including music, video, cameras, and gaming), alongside core phone functions such as voice calls and text messaging.

B. **Software Requirements**

System implementation needs following software requirements

1. **Android Studio IDE:** Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. It is available for download on Windows, macOS and Linux based operating systems. It is a replacement for the Eclipse Android Development Tools (ADT) as primary IDE for native Android application development.

2. **JDK:** The Java Development Kit (JDK) is an implementation of either one of the Java Platform, Standard Edition, Java Platform, Enterprise Edition, or Java Platform, Micro Edition platforms released by Oracle Corporation in the form of a binary product aimed at Java developers on Solaris, Linux, macOS or Windows. The JDK includes a private JVM and a few other resources to finish the development of a Java Application.

3. **Python:** Python is an interpreted high-level programming language for general-purpose programming. Created by Guido van Rossum and first released in 1991, Python has a design philosophy that emphasizes code readability, notably using significant whitespace. It provides constructs that enable clear programming on both small and large scales. In July 2018, Van Rossum stepped down as the leader in the language community after 30 years.
4. **MySQL Database**: MySQL is an open-source relational database management system (RDBMS). MySQL is a central component of the LAMP open-source web application software stack.

5. **PHP**: is a general-purpose scripting language that is especially suited to server-side web development, in which case PHP generally runs on a web server. Any PHP code in a requested file is executed by the PHP runtime, usually to create dynamic web page content.

### IV. ADVANTAGES

Vehicle Tracking system often have several alternatives, like sending automatic alerts to a phone or email if the vehicle is moved without due authorization they can also work as one layer of several combined security measures.

- Car navigation
- Fleet tracking
- Location based services enabled devices
- Driver monitoring
- Route monitoring

### V. RESULT

As the outputs of the system are SMS and graphical representation. Figure 4 shows the overview of the system.

![Figure 5.1 Setting up the Module](image1)

Figure 5.1 Setting up the Module

Figure 5.2 shows the actual setup of the system how the components have been integrated to provide the security. As mentioned before this system consists of a GPS system with the help of which the vehicle can be tracked and the location of the vehicle can be sent to the owner of the vehicle. The same setup has been shown in the below figure.

![Figure 5.2 Working image of the system](image2)

Figure 5.2 Working image of the system

### VI. CONCLUSION

This is a methodology of designing and grouping an affordable, theft control system for associate degree automobiles providing multiple input method where any one input method needs to match. This device is an ultimate treat to the thieves because any unauthorized access attempt will block the engine and ignition system of the vehicle. However, making an anti-theft security system for vehicle protection with all necessary features is not possible due to some limitation including cost, availability of equipment and complexity of interfacing etc. Due to these limitations, all necessary features could not be added for developing the anti-theft security system. So this anti-theft security system has some future work. Using Voice Recognizing technology, the door of the vehicle could be open by the voice of its Owner. This device can also be used in accident prevention system by using highly sensitive vibration system. If somehow an accident occurs then it will notice the location to the hospitals and nearest police station. Traffic system can be improved by this system by monitoring the location of the vehicle.

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