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VEHICLE ANTI – THEFT SYSTEM USING GPS AND GSM

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ABSTRACT
This is an anti-theft system that is used to track the location of the lost vehicle and to stop the vehicle. This proposed work is an attempt to develop a smart system that helps us to protect our vehicle by tracking it remotely through global system for mobile communication (GSM) and Global positioning system (GPS). Basically, the system is providing the owner of the vehicle to stop his moving vehicle whenever he finds it riding by an unknown person. The owner of the vehicle can thus stop the moving vehicle by sending a command to the mobile phone hidden in the car to stop the engine. This mobile phone is connected and communicates with the Micro controller (Arduino) using the GSM. The ceasing of the vehicle will be done through relays (5v) and measures like engine ignition cutoff are installed in the vehicle. The owner can get the latitude and longitude of the vehicle's location which can be directly opened in Google maps to track the actual location. This system also proves fruitful for tracking and controlling the vehicle by using Arduino technology. The main objective is to install the system within the vehicle, so that it provides the users the flexibility to track the location of the lost vehicle and to control it. This complete system is designed taking into consideration the low range vehicles to provide them extreme security.

Keywords:
GPS, GSM, vehicle anti-theft

INTRODUCTION

Security has become a major concern globally, especially for vehicle safety. To address this, cost-effective solutions using Arduino, fingerprint sensors, GPS/GSM, and RFID have been developed. These systems enhance security through biometric and contactless identification methods. Embedded systems, using microcontrollers, play a key role in integrating these technologies for dedicated tasks.

OBJECTIVES

Extensive study of GPS for accurate location tracking, by using a triangulation and trilateration techniques
Emerging of GSM technology for communication, i.e. sending alerts and notifications to the vehicle owner and relevant authorities.

METHODOLOGY

This study utilized a qualitative design, employing a case study approach to demonstrate the development and functionality of a vehicle anti-theft system using GPS and GSM technologies. The system was implemented using an Arduino microcontroller, GPS module, GSM module, relay switch, and a mobile interface. Participants involved in the development and testing included embedded system developers, hardware technicians, and system testers.

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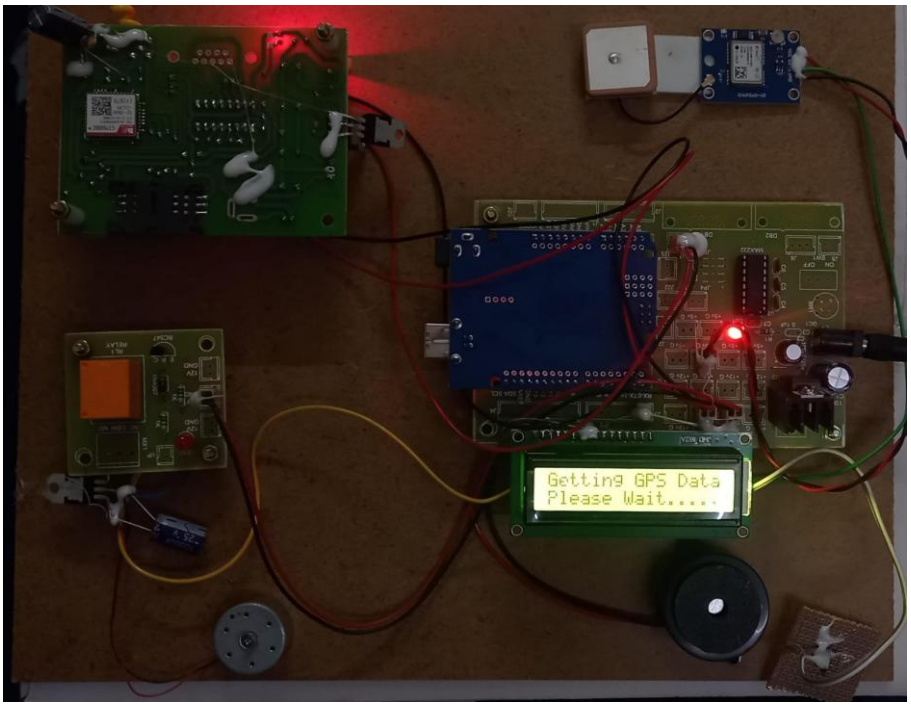

RESULTS AND DISCUSSION

The vehicle anti-theft system using GPS and GSM was successfully developed and tested. The system accurately provided real-time location updates, sending GPS coordinates to the owner's phone, which could be viewed in Google Maps. Upon receiving the stop command via GSM, the Arduino effectively activated the relay to cut off the engine. The system responded promptly and reliably during multiple trials, demonstrating high accuracy and efficiency. It proved to be a cost-effective and practical solution for enhancing vehicle security, particularly for low-range vehicles. The integration of components showed stable performance with minimal errors in communication and execution.

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CONCLUSION

The vehicle anti-theft system using GPS and GSM has proven to be an effective and reliable solution for enhancing vehicle security. It allows real-time tracking and remote engine control, enabling the owner to respond quickly in case of unauthorized access. The system is cost-effective, user-friendly, and suitable for low-range vehicles. With accurate GPS location data and efficient GSM communication, it offers a practical approach to theft prevention. Overall, the project demonstrates how embedded technology can be leveraged to improve personal and public safety.

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