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AUTOMOBILE THEFT IDENTIFICATION USING GSM GPS

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Abstract

In today's world, car theft has become a common problem. To solve this problem, an intelligent theft detection sy stem using GM, GPS, Arduino and fingerprint recognition is proposed. The system consists of an Arduino microc ontroller that controls and monitors various parts of the system. While the GPS module tracks the real-time location of the vehicle, the GSM module sends a notification to the vehicle owner when it detects a theft. A f ingerprint scanner is also used to verify the driver's identity. The system can send push notifications to the owner' s smartphone via text message or email, giving the owner time to take appropriate action. GPS modules also help locate the vehicle and therefore return it. Overall, the smart antitheft system is a good solution to prevent car theft and has good security features such as fingerprint recognition.

Key Words: Fingerprint Sensor, Arduino, GSM, GPS, DC Motor

1. Introduction

Car theft is a major problem worldwide, causing financial losses and inconveniences. While traditional security measures such as car alarms and immobilizers exist, more security measures are needed to prevent vehicle theft a nd provide instant alerts and location tracking to vehicle owners.To meet this demand, smart search devices GSM , GPS, Arduino, fingerprint recognition etc. uses. ,The Arduino microcontroller controls many internal functions s uch as GPS, GSM and fingerprint recognition.The GPS module tracks the location of the vehicle in real time, allo wing vehicle owners to monitor the vehicle and detect illegal movements. When the system detects a theft, the G SM module sends a notification to the owner's smartphone via SMS or mail. FingerprinThe authentication system verifies the identity of the driver and ensures that only authorized personnel can operate the vehicleThis technolo gy provides notifications to vehicle owners about tracking time and location, making it very useful in preventing vehicle theft. The system can also help recover stolen vehicles as the GPS module can track the location of the sto len vehicle.In summary, the smart antitheft system using GSM, GPS, Arduino and fingerprint authentication is an excellent security system that can prevent vehicle theft and provide instant notification and location tracking to v ehicle owners. Thanks to this system, vehicle owners can rest easy knowing that their vehicles are protected by ad vanced security measures.

1.1 Scope

As mentioned before, the smart car concept aims to find a system that can secure Arduino to hear the car with GS M and GPS and fingerprint authentication. The system can be further enhanced to include additional features suc h as remote vehicle control, realtime monitoring and automatic locking systems. Using technologies such as artifi cial intelligence and machine learning can increase the accuracy and efficiency of the system.In addition, the syst em can be integrated with the city's smart city and emergency services to provide fast and effective response in ca se of theft or collision. Data collected by machines can be analyzed to identify patterns and patterns that can help develop better security and policiesThe function of this system is not limited to preventing vehicle theft but also i ncreases overall safety and security. As technology continues to advance and the demand for safer vehicles increa ses, there is great potential for this system to be further developed and used in the future.

2. Literature Review

The research developed a smart vehicle security system that uses RFID tags for user identification and GSM and GPS for realtime tracking and monitoring. The smart system prevents unauthorized access and alerts the owner or

authorities in case of theft.Other research proposes a system that combines biometric authentication (such as fingerprints and facial recognition) with GPS and GSM technology to enable rapid tracking and monitoring of the car. The system also prevents unauthorized access and locates the vehicle in case it is stolen.Similarly, in another study, a smart vehicle security system was developed that uses fingerprint authentication, GPS and GSM technology, prevents unauthorized access and notifies the vehicle owner or authorities in case of theft of the vehicle or a blockage.The proposed system uses Arduino with fingerprint recognition with GD and GPS technology for smart theft detection, based on previous research to provide more solutions and strong vehicle security. The integration of biometric authentication and realtime monitoring with the development of Arduino technology ensures high security for vehicles and their owners.Data shows that a combination of technologies can prevent car theft and improve the safety of car owners and their vehicles. The proposed system contributes to this knowledge and holds promise for traffic safety.

3. Method

The method requires the integration of various hardware and programming Arduino microcontroller to receive data from the GPS and fingerprint scanner modules, interact with the GSM module, and identify patterns that may indicate a theft attempt. The fingerprint scanner identifies the driver to ensure that only authorized personnel can use the vehicle. In addition, GPS and GSM modules can track the current location of the car and send a notification to the owner's mobile phone when a suspicious situation occurs, such as moving the car, because it is not allowed to print fingerprints. Vehicle owners can track the location and movement of their vehicles via mobile application or web interface. If the car is stolen, the owner can activate recovery mode, which makes the car impassable and provides instant tracking location to the owner and law enforcement. This advanced security system can be customized to meet the user's specific needs and provides a solution to preventing vehicle theft. Through the following steps, the smart anti-
theft device can be effectively used to timely alert vehicle owners and find the location, ultimately preventing vehicle theft.

4. Existing system

Viper Smart Start and Carlock are two advanced security systems that use GPS and GSM/3G technology to provide instant location tracking and alerts to the owner's smartphone. Viper Smart Start provides additional protection by protecting the vehicle against theft. The mobile app includes the Viper Smart Start system, which allows vehicle owners to monitor the vehicle's realtime location, speed and movement. If the vehicle is affected, the owner will be notified.Carlock, on the other hand, specializes in detecting illegal vehicles and sending alerts to the vehicle owner's smartphone. It also has a tamper alert system that will alert the owner if the vehicle or security is tampered with.In highspeed vehicles, drivers do not need to provide high security by using fingerprints for personal identification,only employees are allowed to have the right to drive the vehicle. The system will also alert the vehicle owner if an unauthorized person attempts to drive the vehicle.

5. Proposed System

Recommended system to prevent vehicle theft with GSM, GPS, Arduino and fingerprint recognition, which will provide high security to prevent vehicle theft. The proposed system builds on the limitations of the existing system by integrating an additional layer of security through fingerprint authentication. The system requires drivers to provide a valid fingerprint for personal identification before using the vehicle. This feature prevents theft by ensuring that only authorized drivers can use the vehicle. The system also uses GPS and GSM modules to instantly track the vehicle's location and send an alert to the owner's smartphone if anything unusual is detected. Vehicle owners can track their vehicle's location and movements using a mobile app or web interface. In the event of theft, vehicle owners can initiate recovery mode, which will immobilize the car and immediately locate the location for the owner and law enforcement agencies. The proposed system offers an effective solution to the problem of vehicle theft and provides high security against unauthorized access. By using this system, vehicle owners can be sure that their vehicles are safe and can be easily tracked if stolen.

Rescue Mode: In case of theft, the vehicle owner can initiate recovery mode, which will immobilize the vehicle a nd provide instant tracking location to both the owner and the thief's organization. Recovery mode can be initiate d using the mobile app or web interface.

Hardware and Software Integration:
Hardware components including GSM and GPS modules, Arduino microcontroller, fingerprint scanner and other necessary components are integrated and programmed to communicate effectively.

6. Hardware Discussion

6.1 Arduino Uno

Arduino is an effective electronic platform that runs on open source software and hardware. It is designed to meet the needs of artists, designers, hobbyists and anyone interested in creating interactive projects. The microcontroll er on the Arduino board can be designed to control various electronic devices such as sensors, motors, displays an d LEDs.

6.3 GSM

The Global System for Mobile Communications, known as GSM, is a digital cellular network standard that enabl es voice and data communications between mobile devices worldwide. GSM has become one of the most popular mobile networks in the world.
First starting in the 1980s, GSM has evolved over generations, with each generation providing better and faster d ata. Currently the latest version of GSM is 4G, also known as LTE. Future 5G technology is currently in the depl oyment process.

GSM networks operate on different frequencies, and mobile devices must support the frequencies used in the regi on in order to successfully connect to the network. GSM uses Identity Card (SIM) to store important information about users, such as phone numbers, in order to identify and identify users on the network.

1.1 FINGERPRINT SENSOR

Fingerprint scanners work using light or capacitive array circuits. The optical sensor reflects light onto the finger and captures a digital image of the finger. The fingerprint pattern is then converted into a series of 0s and 1s to cr eate a unique fingerprint or original number. If the key matches the user's authorized key, access to the system wi ll be granted.

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Fig -3: Fingerprint sensor

6.4 GPS

Global Positioning System, or simply GPS, is a satellite-based navigation system that provides location and time information regardless of weather conditions. This technology works from anywhere on or near Earth that has line-of-sight of at least four GPS satellites.

Fig -5: GPS

The GPS system consists of a network of orbiting satellites, ground stations, and GPS receivers. The GPS receiver receives signals from GPS satellites to calculate Its position and speed. The GPS receiver measures the time it takes for signals from at least four GPS satellites to reach the receiver to determine its position.

GPS technology has many applications, including vehicle and aircraft navigation, research and map analysis, geolocation for social media and other applications, and tracking people and assets. It is also used in the military for navigation, missile guidance and targeting.

Besides GPS, there are other satellite navigation systems such as Russia's GLONASS, China's Beidou Navigation Satellite System and the European Union's Beidou Navigation Satellite System. Galileo's system. Many GPS devices today are capable of using more than one navigation system to improve the accuracy and validity of location data.

6.5 Relays

Additionally, relays can be used with other sensors and modules to provide additional control and automation capabilities. For example, relays can be used with thermostats to control heating or cooling, or with sensors to activate lights or alarms when detected.

The use of relays can also increase safety through isolation. Low power control circuit and high power circuit. This helps prevent electric shock or damage to the controller in the event of a power outage or overload.

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Fig -6: Relay

In general, the use of relays in smart gloves designed for the blind can provide more ways to control electronic de vices and systems, improving user independence and a good life You seem to have defined a safety mechanism th at is turned off (relay closed) and the motors spin. outside.This security system can be used in many applications such as home or car monitoring or to protect sensitive equipment. By using biometric authentication such as a fin gerprint, the system can ensure that only authorized users can access the system or device.

Fig -7 DC Motor

If the fingerprint does not match the authorized user, the system can lock itself as a security measure to prevent u nauthorized access. This may include shutting down motors or other critical components to ensure the system is s afe and reliable.

In general, this type of security mechanism provides a high level of protection against unauthorized access and he lps ensure that sensitive equipment or systems are secure.

7. Results and Discussion

Integrating GSM, GPS, Arduino and fingerprint authentication into a smart anti-

theft mask provides a solution against vehicle theft. Fingerprint authentication increases the security of the syste

m by allowing only drivers to operate the vehicle. Real-
time tracking of the vehicle's location, speed and direction using GPS and GSM modules allows vehicle owners t o monitor the vehicle's performance and detect suspicious activity. If the system detects that there is no access or interference, it will also send a message or make a call to the owner's smartphone. The rescue system immobilizes the vehicle and provides immediate tracking to law enforcement in case of theft. The system provides hardware a nd software integration to ensure all components communicate effectively, providing a reliable system that preve nts unauthorized access and detects unusual activityThis type of security can be used in the management of buildi ngs, vehicles or sensitive equipment and in other applications that require authentication. Biometric authenticatio n methods such as fingerprints provide high security and help prevent unauthorized access to sites or devices.

8. Conclusion

The smart antitheft device using GSM, GPS, Arduino and fingerprint identification is an innovative and effective antitheft device. The system uses fingerprint authentication to provide an additional layer of security, ensuring on ly authorized drivers can operate the vehicle.GPS and GSM modules used in the system help track the vehicle's lo cation, speed and direction over time. If unusual activity is detected, such as illegal access or tampering, a notific ation is immediately sent to the owner's smartphone. The goal of recovery is to recover a stolen vehicle by immob ilizing it and providing law enforcement with access to a realtime tracking system.Full integration of hardware an d software ensures efficient communication between the system. The system was tested using a car model and pr oved reliable in preventing unauthorized access and detecting unusual activity.