VEHICLE THEFT INTIMATION USING WIRELESS COMMUNICATION AND REMOTE CONTROL OF ITS ENGINE

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ABSTRACT - The aim of this project is to provide an alert to the user about any unauthorized access of their vehicle with the help of wireless technology. The alert will be in the form of an auto generated SMS sent to the user. In addition to this, the user can reply to this SMS which will disable the ignition of the vehicle. Security system for vehicles is much needed in present times as the percentage of crime keeps on increasing. In this proposed system, if an attempt is made to steal the user's car, the microcontroller gets intimated about this through a switch mechanism, which then sends an alert to the user in the form of an SMS with the help of a GSM modem. The user can then reply to this message and based on his command the microcontroller can disable the ignition of the vehicle, thus stopping the vehicle. With the help of this system the user can turn off the ignition of his car from any place. This system is also integrated with a GPS which can provide the exact position of the vehicle in terms of latitudes and longitudes. This information will be available in the SMS sent to the user.

KEYWORDS: GSM Modem, GPS, Microcontrollers, Auto theft

INTRODUCTION

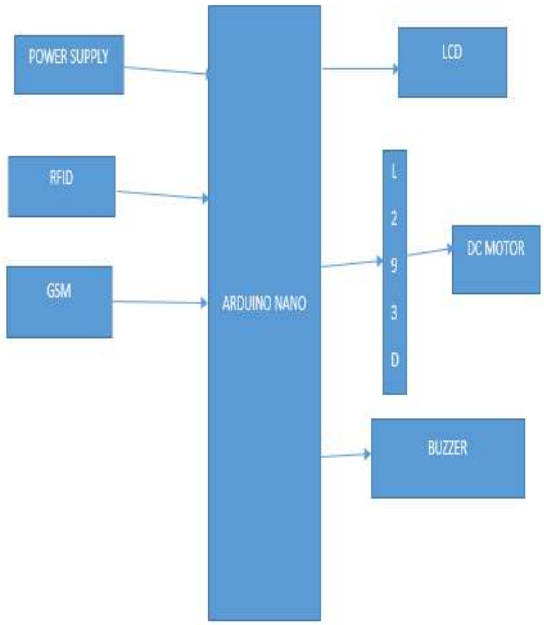
The percentage of auto thefts has been increasing over the past few year. Around $6.5 billion was lost due to auto thefts in USA during the year 2019. With the automotive sector projected to be increasing in its growth

over the forthcoming years, the need for better security systems has become an important issue among automotive industries. The proposed system helps to tackle one of the important drawbacks of the existing security systems. At present there is no tracking facility available in all default security systems but with the proposed system the user will be provided with the exact location of his vehicle at regular intervals of time. The user will also be provided with certain remote control over his vehicle. These improved facilities will help to reduce the rate of crimes related to auto thefts

LITERATURE REVIEW

A GPS (Global Positioning System) based security system which could find out the location of the stolen vehicle and provide the users with the direction of the vehicle was implemented in automobile security. This system works with the aid of Global Positioning Satellites. This system had an On-Board Module which will be present in the vehicle and a base station which receives information about all the vehicles associated with it. The major drawback of this model is it's over dependency on the base station and also lack of proper security system. To overcome this obstacle, a GSM based model is employed in this security system. Thus the main aim of this model is to use wireless technology for automobile security system

IMPLEMENTATION



DESCRIPTION

BUZZERS

In common parlance a Buzzer is a signaling device that is not a loudspeaker. It can be mechanical, electromechanical, or electronic (a piezo transducer). BeStar produces Buzzers in every available configuration for a wide variety of applications. A Piezo transducer can produce the sound for panel mount buzzers, household goods, medical devices and even very loud sirens. When a lower frequency is required an electromagnetic buzzer can fill the need. These are very common in automotive chimes and higher end clinical diagnostic devices. The BeStar buzzer range includes self drive units with their own drive circuitry (indicators), or external drive units, which allow the designer the flexibility to create their own sound patterns.

NANO

The Arduino Nano, as the name suggests is a compact, complete and bread-board friendly microcontroller board. The Nano board weighs around 7 grams with dimensions of 4.5 cms to 1.8 cms (L to B). This article

discusses about the technical specs most importantly the pinout and functions of each and every pin in the Arduino Nano board.

Arduino Nano has similar functionalities as Arduino Duemilanove but with a different package. The Nano is inbuilt with the ATmega328P microcontroller, same as the Arduino UNO. The main difference between them is that the UNO board is presented in PDIP (Plastic Dual-In-line Package) form with 30 pins and Nano is available in TQFP (plastic quad flat pack) with 32 pins. The extra 2 pins of Arduino Nano serve for the ADC functionalities, while UNO has 6 ADC ports but Nano has 8 ADC ports. The Nano board doesn't have a DC power jack as other Arduino boards, but instead has a mini-USB port. This port is used for both programming and serial monitoring. The fascinating feature in Nano is that it will choose the strongest power source with its potential difference, and the power source selecting jumper is invalid.

RFID READER

Active RFID and Passive RFID technologies, while often considered and evaluated together, are fundamentally distinct technologies with substantially different capabilities. In most cases, neither technology provides a complete solution for supply chain asset management applications. Rather, the most effective and complete supply chain solutions leverage the advantages of each technology and combine their use in complementary ways. This need for both technologies must be considered by RFID standards initiatives to effectively meet the requirements of the user community.

GSM

GSM (Global System for Mobile communications) is a cellular network, which means that mobile phones connect to it by searching for cells in the immediate vicinity. GSM networks operate in four different frequency ranges. Most GSM networks operate in the 900 MHz or 1800 MHz bands. Some countries in the Americas use the 850 MHz and 1900 MHz bands because the 900 and 1800 MHz frequency bands were already allocated.

The rarer 400 and 450 MHz frequency bands are assigned in some countries, where these frequencies were previously used for first-generation systems.

GSM-900 uses 890–915 MHz to send information from the mobile station to the base station (uplink) and 935–960 MHz for the other direction (downlink), providing 124 RF channels (channel numbers 1 to 124) spaced at 200 kHz. Duplex spacing of 45 MHz is used. In some countries the GSM-900 band has been extended to cover a larger frequency range. This 'extended GSM', E-GSM, uses 880–915 MHz (uplink) and 925–960 MHz (downlink), adding 50 channels (channel numbers 975 to 1023 and 0) to the original GSM-900 band. Time division multiplexing is used to allow eight full-rate or sixteen half-rate speech channels per radio frequency channel. There are eight radio timeslots (giving eight burst periods) grouped into what is called a TDMA frame. Half rate channels use alternate frames in the same timeslot. The channel data rate is 270.833 kbit/s, and the frame duration is 4.615 ms.

CONCLUSIONS

This concludes that the proposed model will provide a better security system for all types of vehicles. This system can be used by people from all walks of life, as it will be cheaper than most of the available security systems. Another major aspect of this system is that, it does not require any separate models for different types of vehicle. Since GPS is used in the tracking system the exact location of the vehicle can be determined.

Some of the limitations of this system are

- It may suffer from network issues in some places where cellular network is not available
- The alert message can be sent only to the registered mobile number

The introduction of a GPS device can solve the network problems. The GPS when used along with apps like Google Maps can make it much easier to locate the stolen vehicle.

FUTURE SCOPE

While the current security system is much more compatible for cars, with some modifications this system can be implemented for two wheelers also. In counties like India where auto thefts involving motorbikes are on a rise and also with an ever-growing market for two wheelers, this system can help to reduce the crime rates relating to auto thefts. This system can be further improved by introducing a dedicated mobile application which could eliminate the limitations regarding unreliable network connections.

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