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ARM BASED ADVANCED VEHICLE SECURITY SYSTEM THROUGH GSM AND GPS

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ABSTRACT

The main expression of the project is to use the wireless technology effectively in the automotive environments by victimization the GSM electronic equipment used in inflicting SMS simply just in case of stealing intimation. The foremost scope of this project is to stop the engine of associate automobile automatically. This can be done whenever somebody making an attempt to steal the vehicle, at that time sends associate interrupt to a programmable microcontroller of 8051 family that stores owner's variety upon a miss concern the first time. Once someone tries to steal the vehicle then microcontroller gets associate signal and GSM electronic equipment will send the message, the owner receives a SMS that his vehicle is being taken then the owner will send SMS to the GSM electronic equipment to 'STOP', whereas the vehicle square measure stopped. The management instruction is given to the ARM LPC2148 through the interface, the output from that activates a relay driver to disconnect the ignition of the auto resulting in stopping the vehicle.

Keyword: GSM, GPS, Vibration device, ARM LPC2148.

INTRODUCTION

The main objective of this project is to send AN automotive vehicle generated SMS to the owner of the vehicle regarding any unauthorized entry. A plus of this project is that the owner of the vehicle can even challenge the SMS, which can deactivate the ignition of the vehicle. Because the rate is increasing day by day, vehicle stealing system is important for each vehicle. During this project, if AN unauthorized person tries to steal the vehicle, the microcontroller gets. AN interrupt through a switch mechanism that is connected to the system. Then, now it commands the GSM electronic equipment to send AN SMS. The vehicle owner receives the SMS that his vehicle is taken. Then he will challenge AN SMS to the GSM electronic equipment to prevent the engine. Here, GSM electronic equipment is interfaced to the PIC microcontroller, that receives the message, the O/P of that activates a mechanism that deactivates the ignition of the vehicle leading to stopping the vehicle. This project uses a lamp to specify the ON/OFF condition of the vehicle. Therefore, the owner of the vehicle from anyplace will deactivate the engine of the vehicle. Further, this projected system will be developed by interfacing a GPS system, which can offer the precise location of the vehicle in terms of line of longitude and latitude. Further, this knowledge will be sent to the vehicle owner through AN SMS World Health Organization will enter these values on google maps to urge the vehicle location.

This system gets ON once vibration happens, the battery gets lighter, any of the front doors remaining open or any obstacle comes in any explicit space. If any of those parameters is detected, the microcontroller sends the commands to the buzzer, the SM electronic equipment and to the liquid crystal {display|LCD|digital display|alphanumeric display} display. Here, the MAX232 acts as an associate degree interface between the microcontroller and also the GSM electronic equipment.

The MAX232 acts an associate interface between the GSM electronic equipment and therefore the microcontroller to alter the TTL signals to RS232 signals. The microcontroller acts a heart of the bird of prey system, that accepts the signals from these sensors and sends the signals to the GSM electronic equipment and alerts the buzzer. Then, sends that data to the owner of the automobile.

Thus, these area units GPS, and GSM based mostly vehicle stealing system comes by implementing these vehicle security system comes, a vehicle will be protected against thefts. In future, this opposing stealing system for automobiles are increased to operate as associate integrated-data-security system for car communication systems. It might guarantee that each one the info changed among the vehicle and out of doors the vehicle is protected.

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LITERATURE REVIEW

Many researchers have projected several anti-theft systems. This method is the associate integration of additional trendy technologies [1, 4]. System enclosed in [2] uses a GSM that is an intermediary between the outside world and system, its output is in sort of frequency, there's want of Dual-tone multi-frequency decoder for changing frequencies into voltage levels of zeros and ones. Microcontroller employed in [1] could be a 8-bit that serves a bit different 16-bit, 32-bit microcontrollers. The projected system during this paper is meant to provide complete security to automobiles. The system consists of ARM seven microcontroller that is LPC 2148 by Philips Company. The system consists of 2 main components. The first half contains door management and the second half contains security that is provided to prevent the ignition of car, message transference ability to owner for unauthorized access with correct vehicle location victimization GPS and GSM that uses serial communication.

Commercially offered anti-theft transport systems are very expensive. Untracking Vehicle pursuit Unit has the power to integrate the GPS pursuit system with existing vehicle alarm or offer alarm options once somebody is meddling with owner vehicle. It permits police investigation the protection threat before the vehicle is driven away and provides the power to trace the vehicle over the web. The ability to trace the vehicle over the web is completed by utilizing international Positioning Satellites. knowledge like Global Position, Speed and Time (PVT) are transmitted over the Cellular network. The data transmitted from the tracking device is disseminated and keep on your private confidential account or sent over the wireless network. The data is cross documented on a street level map for viewing. The positioning info provided is cross respect to the closest geographic address and displayed in residential /commercial address format. the most disadvantage of the prevailing system is that the system provides solely a broad layout of the geographical address, providing and doesn't offer street wise address. The Speed of the vehicle and the engine is not any manner controlled by the existing systems, so exposing the vulnerability of a system that provides solely pursuit.

IMPLEMENTATION

In gift life, we have a tendency to all individuals cannot live while not a transportation service for correct and ideal communication. We have a tendency to additionally understand that the own vehicle play a very important role in today's life. Therefore owner doesn't need to loss that, attributable to this security problem we have a tendency to confer this method. The diagram of system shown within the Figure three. There are sure functions accomplished by these blocks. The descriptions of those blocks are as follows.

Vibration sensor

A vibration sensing element is capable of measurement vibration. Once someone or any obstacle hits the vehicle, the sensing element sends a symbol indicating the intensity of motion. We tend to use this sensing element as for security of rider. It senses the vibration, send signal to the microcontroller and microcontroller send the message to the contact range hold on within the controller.

Microcontroller unit

In microcontroller unit we tend to use AT89C51 microcontroller. This is often the most a part of the project. Each command or associate instruction to the system is given by this unit. It receives the signals from detector and GPS and sends message conscious of owner.

Relay

The relay we tend to area unit victimization during this is a mechanical device relay. The excitation voltage that's needed is +12V DC. Its driven victimization the relay driver IC ULN2003 /VLN 2003A. The device is connected to the electro mechanical relay. Once the relay is happy by applying the 12V DC the relay gets activated and within the method activates the engine and once the excited voltage is stopped, the relay gets deactivated and within the method turns OFF.

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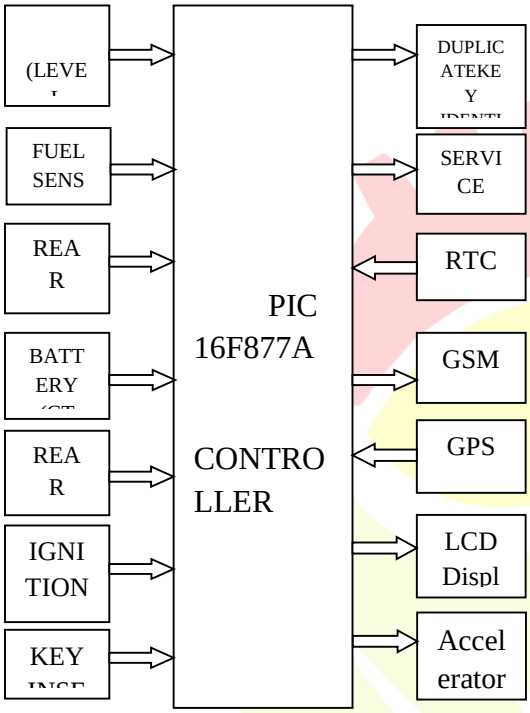

DESCRIPTION OF THE SYSTEM

The system includes GSM electronic equipment, GPS receiver, relay, Interrupt switch, Vibration device and Microcontroller as shown in Fig. If the Interrupt switch is ironed and begin the vehicle then controller won't offer any alerting. As a result of solely owner of the vehicle is aware of the switch location. If the Interrupt switch isn't press and vehicle begin by alternative person or larceny then controller can offer alerting to owner with location through SMS via GSM. The owner will stop the engine by causation back SMS 'stop' to controller through GSM and by Relay engine can stop. The owner will realize the situation of the vehicle by causation SMS to controller and thru GPS the owner will realize the precise location of the vehicle. The Vibration device used as associate accidental device during this system for owner security purpose. If accident happens at that point data regarding the accident is send with location via SMS to the hold on range through GSM. GSM is that the hottest technology within the world. The name GSM initial comes from a bunch referred to as cluster Special Mobile (GSM), which was shaped in 1982 by the Conference of Post and Telecommunications Administrations (CEPT) to develop a pan-European cellular system. That may replace the various existing incompatible cellular systems. Once GSM service started in 1991, the abbreviation "GSM" was renamed to world System for Mobile Communications. GSM uses Frequency Division Multiplexing and Time Division Multiplexing. FDMA divides the frequency ranges for GSM that are 890-915, 935-960. Module used here is S2-1040W-Z0936 (SIM 900A). The GSM network may be divided into 3 elements

i. Mobile Station
ii. Base Station
iii. Network system

The mobile station consists of mobile instrumentality and a Subscriber Identity Module. The foremost common mobile instrumentality is that the transportable. By inserting the SIM card into phone, the user is ready to receive calls at that phone, build calls from that phone, or receive alternative services. The mobile instrumentality unambiguously identifies the International Mobile instrumentality Identity. The bottom Station system consists of the bottom Transceiver Station and therefore the Base Station Controller.

GPS

The Global Positioning System is world navigation satellite system that uses a constellation of between twenty four and thirty two, medium Earth Orbit satellites that transmit precise microwave signals that helps GPS receivers to see their location, speed, direction, and time. GPS has become a wide used aid to navigation worldwide, and a useful gizmo for map-making, land mensuration, commerce, scientific uses, pursuit and police work. Also, the precise time reference is employed in several applications together with the scientific study of earthquakes and as a time synchronization supply. A GPS receiver measures its position by rigorously temporal arrangement the signals sent by the constellation of GPS satellites high higher than the world. Every satellite frequently transmits messages containing the time, a particular orbit for the satellite causing the message, and also the general system health and rough orbits of all GPS satellites. In fig.2. We'll see the GPS electronic equipment.

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RESULT AND DISCUSSION

This section provides the small print concerning the experimental results of the projected approach. The implementation of realization of lockup and unlocking of thieving vehicles exploitation will document is completed with success. The communication is correctly evaded any interference between totally different modules within the style. Style is completed to satisfy all the specifications and necessities. Code tools like keil uvision machine, proload to dump the ASCII text file into the microcontroller, orcad low-cal for the schematic diagram are wont to develop the code before realizing the hardware. Fig.vi shows the hardware a part of the project. This kit consists of associate ARM Controller, Relay circuit, GSM Module and digital display show area unit interfaced on one board and embedded on single board that is embedded to a

vehicle as a bearing unit. The relay is connected to the Vehicle Engine Unit of the car once "OFF" message sent by the owner of the vehicle to the mobile embedded within the management unit, the controller displays the message within the digital display as shown in Fig.7 and invokes the relay that's connected to the vehicle engine which is able to stop fuel flow therefore lockup the vehicle engine by causation message. Equally once "ON" message sent by the owner of the vehicle to the mobile embedded within the management unit, the controller displays the message within the digital display as shown in Fig.8 and invokes the relay that's connected to the vehicle engine which is able to successively permits the fuel flow by unlocking the vehicle engine by causation message.

CONCLUSION

Antitheft security system are often put in in automobile simply. Thanks to this security system, it's too laborious to associate degree unknown person to access. Here a shot is formed to form a cheap and glorious vehicle anti-theft system that uses terribly low power provide, not solely this however additionally some additional options like face recognition, alcohol sensing element are often superimposed to grant a lot of security. Future scope is that the system ought to be a lot of compact (i.e. are often embedded on single chip) and safer.

FUTURE SCOPE

1. Presently solely SMS feature is obtainable, we will embrace the Call feature for simple operation.
2. Mistreatment humanoid application we will conjointly stop the engine.
3. electro-acoustic transducer may well be interfaced to the GSM/GPS module so during larceny activity voice decision may well be established with the owner.

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