

SECURED VEHICLE & SAFETY SYSTEM OF DRIVER BY USING GSM/GPRS TECHNOLOGY

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Abstract: This proposed work is an attempt to design an advanced vehicle safety system that uses GSM to prevent theft and to determine the location of vehicle. Today theft is happening on the parking or in some insecure places. The safety of the vehicle is exceptionally essential. This system also saves the valuable life of humans as it encourages the strict use of helmets. The system will be activated only after wearing the helmet or else the user cannot able to access the vehicle. This system contains GSM modem, alcohol Sensor, HT12D decoder, microcontroller, relay switch. GSM system is installed in the vehicle for sending the information to the user in case of any theft. It also tracks the position of the vehicle. Whenever the engine is ON, the GSM will send the information to the owner. This complete system is designed by considering the Lower range vehicles to provide them extreme safety. The proposed embedded system can be considered on a single chip microcontroller with low cost.

Keywords: *GSM, Micro controller, Accident prevention.*

I. INTRODUCTION

These day's vehicle robbery cases are higher than any other time, it has gotten to be fundamental to give a vehicle a superb security with the main solid hostile to burglary gadget. Vehicle focal locking

framework guarantees the best ensure to secure your vehicle from various types of burglary cases. It is a vehicle security gadget that offers fantastic insurance to your vehicle. However this framework couldn't demonstrate to give complete security and openness to the vehicle in the event of burglary. So a more created framework makes utilization of an inserted framework focused around GSM innovation. The outlined and created framework is introduced in the vehicle. Whether one is holder of single vehicle or in excess of 1000, Vehicle Tracking System (VTS) is an answer for spot, track and secure your portable resources. It is intended for exact and ongoing following and reporting of your vehicle(s), regardless of where it is placed Combination of high-affectability GPS units in vehicle following frameworks has empowered these gadgets to work in different varieties of situations, for example, characteristic ravines, urban gulches and much under substantial foliage, the length of system scope is solid. Right now GPS vehicle following guarantees their wellbeing as voyaging. This vehicle following framework found in clients vehicles as a burglary counteractive action and salvage gadget. Vehicle manager or Police take after the sign emitted by the following framework to place a victimized vehicle in parallel the stolen vehicle motor rate going to

diminished and pushed to off. In the wake of exchanging on the motor, engine can't restart without consent of watchword. This framework introduced for the four wheelers, Vehicle following generally utilized as a part of naval force administrators for war fleet administration capacities, directing, send off, ready for and security. The applications incorporate observing driving execution of a guardian with a teenager driver. Vehicle following frameworks acknowledged in shopper vehicles as a burglary avoidance and recovery gadget. In the event that the burglary recognized, the framework sends the SMS to the vehicle holder. After that vehicle manager sends the SMS to GSM modem appended to the controller, issue the important signs to stop the robbery. The principle point of the present exploration work is to outline and create a shrewd and strong security framework for vehicles that can avert robbery and give data on mischances. The framework being produced through the present work utilizes GPS and GSM innovation and can be made moderate so it can be utilized as a part of ease vehicles even in bikes.

II. HARDWARE SYSTEM

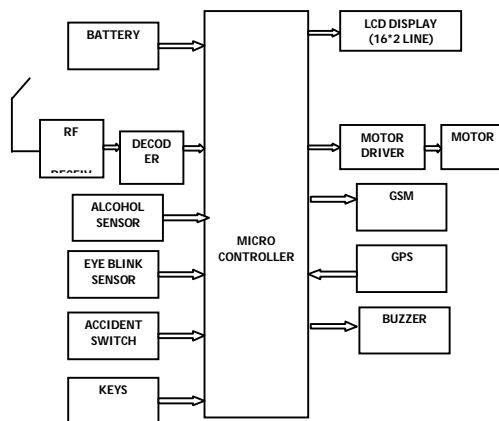


Fig 1: Vehicle section

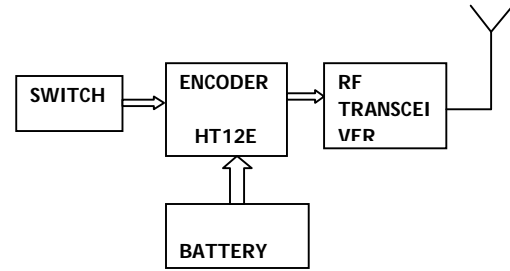


Fig 2: Remote section

In this project we are going to implement an automated system for owner safety and automobile security. Now a day's everything is automated to reduce the human efforts and man power. This is the main advantage of embedded systems. In this project, we are using the alcohol and eye blink sensor. Because, now a day's accidents are occurring more due to drunk n drive only or sleepy driving. By using this system we can avoid such type of accidents. By using this system we can also provide the security to automobile. In this project we are providing the keys (means password based security) to the automobiles by using GSM technology. If any accident occurs then immediately track that position with the help of GPS technology. In this system we are providing the control system to the owner by using GSM technology which means that if anybody enter wrong password it will raises the buzzer and as well it will send the message to the owner's mobile. If he pressed the correct password then also it will send the message to the owner's mobile. Even though, he pressed the correct password the motor will not start the owner will have to send the confirmation message to start then only the engine will start. In this way, we are providing the high security to the automobile by using the GSM technology.

III. SYSTEM HARDWARE FEATURES

Micro controller: This section forms the control unit of the whole project. This section basically consists

of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

ARM7TDMI: ARM is the abbreviation of Advanced RISC Machines, it is the name of a class of processors, and is the name of a kind technology too. The RISC instruction set, and related decode mechanism are much simpler than those of Complex Instruction Set Computer (CISC) designs.

Liquid-crystal display (LCD) is a flat panel display, electronic visual display that uses the light modulation properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock.

Alcohol sensor:

Sensitive material of MQ-3 gas sensor is SnO₂, which with lower conductivity in clean air. When the target alcohol gas exist, the sensor's conductivity is higher along with the gas concentration rising. Please use simple electro circuit, Convert change of conductivity to correspond output signal of gas concentration. MQ-3 gas sensor has high sensitivity to Alcohol, and has good resistance to disturb of gasoline, smoke and vapor. The sensor could be used to detect alcohol with different concentration; it is with low cost and suitable for different application.



Fig 3: Alcohol sensor

Eye Blink sensor:

FEATURES

- EYE BLINK indication by LED
- Instant output digital signal for directly Connecting to microcontroller
- Compact Size
- Working Voltage +5V DC
- TTL output 5V or 0V

APPLICATIONS

- Digital Eye Blink monitor
- Vehicle Accident prevention.
- Suite for real time driving applications.



Fig 4: Eye blink sensor

GSM:

Global System for Mobile Communication (GSM) is a set of ETSI standards specifying the infrastructure for a digital cellular service.

The network is structured into a number of discrete sections:

- Base Station Subsystem – the base stations and their controllers explained
- Network and Switching Subsystem – the part of the network most similar to a fixed network, sometimes just called the "core network"
- GPRS Core Network – the optional part which allows packet-based Internet connections
- Operations support system (OSS) – network maintenance

SM was intended to be a secure wireless system. It has considered the user authentication using a pre-shared key and challenge-response, and over-the-air encryption. However, GSM is vulnerable to different class of attacks, each of them aiming a different part of the network.

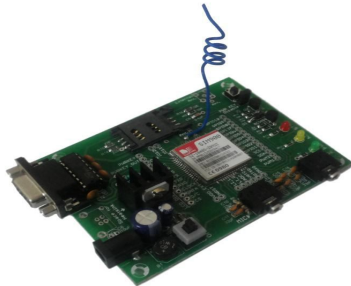


Fig 4: GSM Module

GPS:

Global Positioning System (GPS) technology is changing the way we work and play. You can use GPS technology when you are driving, flying, fishing, sailing, hiking, running, biking, working, or exploring. With a GPS receiver, you have an amazing

amount of information at your fingertips. Here are just a few examples of how you can use GPS technology.

GPS technology requires the following three segments.

- Space segment.
- Control segment.
- User segment

Space Segment

At least 24 GPS satellites orbit the earth twice a day in a specific pattern. They travel at approximately 7,000 miles per hour about 12,000 miles above the earth's surface. These satellites are spaced so that a GPS receiver anywhere in the world can receive signals from at least four of them.

Control Segment

The control segment is responsible for constantly monitoring satellite health, signal integrity, and orbital configuration from the ground control segment includes the following sections: Master control station, Monitor stations, and Ground antennas.

User Segment

The GPS user segment consists of your GPS receiver. Your receiver collects and processes signals from the GPS satellites that are in view and then uses that information to determine and display your location, speed, time, and so forth. Your GPS receiver does not transmit any information back to the satellites.

The following points provide a summary of the technology at work:

- The control segment constantly monitors the GPS constellation and uploads information

to satellites to provide maximum user accuracy

- Your GPS receiver collects information from the GPS satellites that are in view.
- Your GPS receiver accounts for errors. For more information, refer to the Sources of Errors.
- Your GPS receiver determines your current location, velocity, and time.
- Your GPS receiver can calculate other information, such as bearing, track, trip distance, and distance to destination, sunrise and sunset time so forth.
- Your GPS receiver displays the applicable information on the screen.

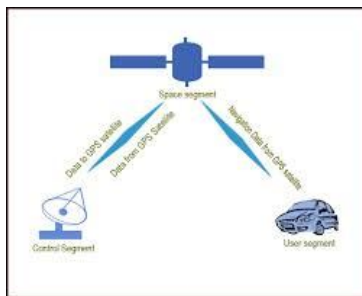


Fig 5: GPS Working

DC Motor:

A DC motor relies on the fact that like magnet poles repels and unlike magnetic poles attracts each other. A coil of wire with a current running through it generates an electromagnetic field aligned with the center of the coil. By switching the current on or off in a coil its magnetic field can be switched on or off or by switching the direction of the current in the coil the direction of the generated magnetic field can be switched 180°.



Fig 6: DC Motor

Motor driver (L293D):

DC motors are typically controlled by using a transistor configuration called an "H-bridge". This consists of a minimum of four mechanical or solid-state switches, such as two NPN and two PNP transistors. One NPN and one PNP transistor are activated at a time. Both NPN and PNP transistors can be activated to cause a short across the motor terminals, which can be useful for slowing down the motor from the back EMF it creates. H-bridge. Sometimes called a "full bridge" the H-bridge is so named because it has four switching elements at the "corners" of the H and the motor forms the cross bar. The switches are turned on in pairs, either high left and lower right, or lower left and high right, but never both switches on the same "side" of the bridge. If both switches on one side of a bridge are turned on it creates a short circuit between the battery plus and battery minus terminals. If the bridge is sufficiently powerful it will absorb that load and your batteries will simply drain quickly. Usually however the switches in question melt.

RF transmitter and Receiver:

RF transmitters are electronic devices that create continuously varying electric current, encode sine waves, and broadcast radio waves. RF transmitters use oscillators to create sine waves, the simplest and

smoothest form of continuously varying waves, which contain information such as audio and video. Modulators encode these sign wives and antennas broadcast them as radio signals. There are several ways to encode or modulate this information, including amplitude modulation (AM) and frequency modulation (FM). The ST-TX01-ASK is an ASK Hybrid transmitter module. The ST-TX01-ASK is designed by the Saw Resonator, with an effective low cost, small size, and simple-to-use for designing.

- Frequency Range: 315 / 433.92 MHZ.
- Supply Voltage: 3~12V.
- Output Power: 4~16dBm
- Circuit Shape: Saw

RF receivers are electronic devices that separate radio signals from one another and convert specific signals into audio, video, or data formats. RF receivers use an antenna to receive transmitted radio signals and a tuner to separate a specific signal from all of the other signals that the antenna receives. Detectors or demodulators then extract information that was encoded before transmission. There are several ways to decode or modulate this information, including amplitude modulation (AM) and frequency modulation (FM).

Description:

The RX04 is a low power ASKS receiver IC which is fully compatible with the MitelKESRX01 IC and is suitable for use in a variety of low power radio applications including remote keyless entry. The RX04 is based on a single-Conversion, super-heterodyne receiver architecture and incorporates an entire phase-locked loop (PLL) for precise local oscillator generation.

IV. CONCLUSION

Tracking framework or system is getting to be progressively vital in expansive urban areas and it is more secured than different frameworks. It has continuous ability, rises with a specific end goal to fortify the relations among individuals, vehicle and street by assembling present day data advances or technologies and ready to structures a real time accurate, compelling exhaustive transportation framework. Updating this setup is simple which makes it open to future a prerequisite which likewise makes it more efficient. The proposed work is cost-effective, reliable and has the function of preventing theft and providing accurate tracking system. A smart anti-theft system is one of the essential systems that homogenize both GPS and GSM systems. It is fundamental because of the huge numbers of uses of both GSM and GPS frameworks and the wide use of them by a great many individuals all through the world. This framework intended for clients in area development and transport business, provides real-time information such as location, speed and expected arrival time of the user is moving vehicles in a concise and easy-to-read format. This framework might likewise valuable for correspondence process among the two focuses.

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