

Anti-Theft Device for Vehicle using GSM/GPRS Technology

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Abstract:- The aim of this paper to spread the engineering knowledge and also find out vehicles, which are stolen. This paper considers an overview of Car security system using GSM technology, software development and its applications. The whole circuit is divided into two main parts, the first part deals with the algorithm/coding and the second part deals with the hardware. Later part of report covers the methodology and working of project. Security system is one from the fast growing engineering technologies. It has a number of applications in different areas and provides potential benefits. Although we now associate the word to an electronic machine, it still stays true to the meaning of word.

Project Scope:- This project the Security system is the essential part of our daily life and it is always necessary in all eras. Now a day this technology is used very commonly. It is also called car anti thief device.

Keywords:- GSM, GPRS, Aurdino, Sim Holder, Antenna.

I. INTRODUCTION

Today, the vehicle accident rate has increased by each day and the theft rate has increased by compared to the previous decade. C programming is used to improve accuracy, GPS and GSM modules allow the to track vehicles anywhere on earth. GSM is used to broadcast the vehicle 's precise location and send warning or mitigation messages to mobile phones. Vibration sensors are used to detect accidents. Therefore, when an accident occurs this sensor is activated. Then information is sent to the processor. At the same time, GPS and GSM modems connected to the same processor are also activated. Accurate latitude and longitude of degrees of the accident site was acquired by GPS. The same data is also sent to contacts stored in his database via a GSM modem. There- fore, in this system, information is sent to the police station, friends, etc. It also reduces the overall operating time of the , saving lives in an emergency. In high theft situations, a better security system is required. It is much safer to have a system that monitors the on behalf of the "guard" system (vehicle), communicates with the device owner without endangering human life, and activates the alarm.

II. ARDUINO

Arduino is an open source electronics platform based on easy-to-use hardware and software. Arduino boards read inputs (sensor lights, finger presses on buttons, or Twitter messages) and convert them to outputs that run motors, light LEDs, or post something online. I can

do it. I can do it. You can tell the board what to do by sending a series of instructions to the microcontroller on the board. To do this, use the Arduino (based) programming language.



Fig. 1: Arduino

III. GPRS

GPRS Shield provides a way to receive remote locations using the GSM cellular network

- Short Message Service
- Audio
- GPRS

The GPRS Shield is compatible with boards that have the same form factor (and pinout) as standard Arduino boards. The GPRS Shield is configured and controlled via UART using simple AT commands. Based on SIM900 module from SIMCOM, GPRS Shield is like a mobile phone without human machine interface. In addition to communication functions, the GPRS shield has 12 GPIOs, 2 PWMs, and 1 ADC.



Fig. 2: GPRS

IV. APPLICATION IDEAS

- M2M (Machine 2 Machine) Application - Transfer control data between two machines in two different factories using SMS or GPRS.
- Remote control device - he sends SMS while in the office to turn on or off the washing machine at home.
- Remote Weather Station or Wireless Sensor Network - Reference the Arduino Stalker to create a sensor node that sends sensor data (temperature, humidity, etc. from the weather station) to a web server (e.g. Pachube). de).
- Interactive Voice Response System - Combine the GPRS shield with an MP3 decoder and a DTMF decoder (next to the Arduino) to create an interactive voice response system (IVRS).
- Vehicle Tracking System - Pair the GPRS Shield with an Arduino and GPS module, attach it to your vehicle and live post your location to the Internet. Can be used as a car burglar alarm.

V. SIM HOLDER

6 pin holder for SIM card. The SIM900 supports both 1.8 volt and 3.0 volt his SIM cards. SIM card voltage type is automatically detected. Out of the 6 pins on the SIM card holder, 1 is permanently disconnected and the remaining 5 are:

- Sim VDD
- Sim SRT
- Sim Clk
- Sim DATA
- GND



Fig. 3: Sim Card Holder

VI. ANTENNA CONNECTOR

Onboard the GPRS shield has a small RF coaxial connector to connect to the GSM antenna. The ports present on the GPRS shield are called U.FL ports. The GSM antenna that comes with the GPRS Shield has an SMA connector (instead of an RP-SMA connector). A patch cable to connect the antenna to the board is also included with the GPRS shield. The board has two holes. One is a hole for mounting the antenna and the other is for routing a patch cord from the bottom to the top of the board, which can be connected to a U.FL connector. This is useful if you want to fit the GPRS shield and the Arduino board into one enclosure.

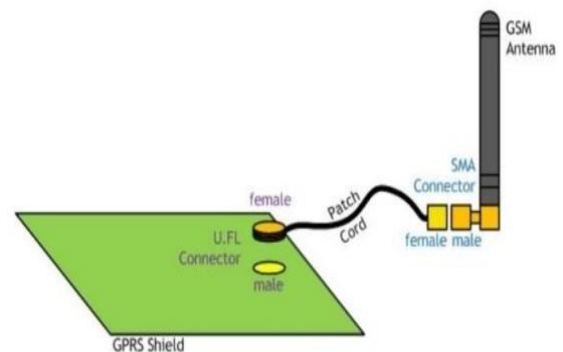


Fig. 4: Antenna

VII. SENDING SMS USING HARDWARE UART

Below is an Arduino sketch for sending an SMS. Tested with Arduino Duemilanove, but works with all compatible variants. Note that this sketch uses the ATmega328P hardware UART. To run this sketch, follow these steps:

- Download this sketch to your Arduino with the GPRS shield removed. The GPRS shield should be removed so as not to interfere with the programming of the Arduino which is done via the hardware UART (using FT232RL).
- Power off the Arduino by removing it from the USB port.
- Set the serial port jumper on the GPRS shield to the Xduino position (e.g. Arduino's RX antenna to the GPRS shield and insert the SIM card).
- Attach the GPRS shield to the Arduino
- Power the Arduino using the USB port or an external power supply.
- Turn on the GPRS shield power switch. Wait until the Network LED (D1) starts flashing.
- Use a pen or plastic tweezers to access the reset switch on the Arduino board to reset the microcontroller and run the sketch from scratch. Do not try to reset the Arduino by plugging and unplugging, as this will turn off the GPRS shield.
- If all goes well, the SMS will be received on the recipient's handset.

VIII. BLOCK DIAGRAM

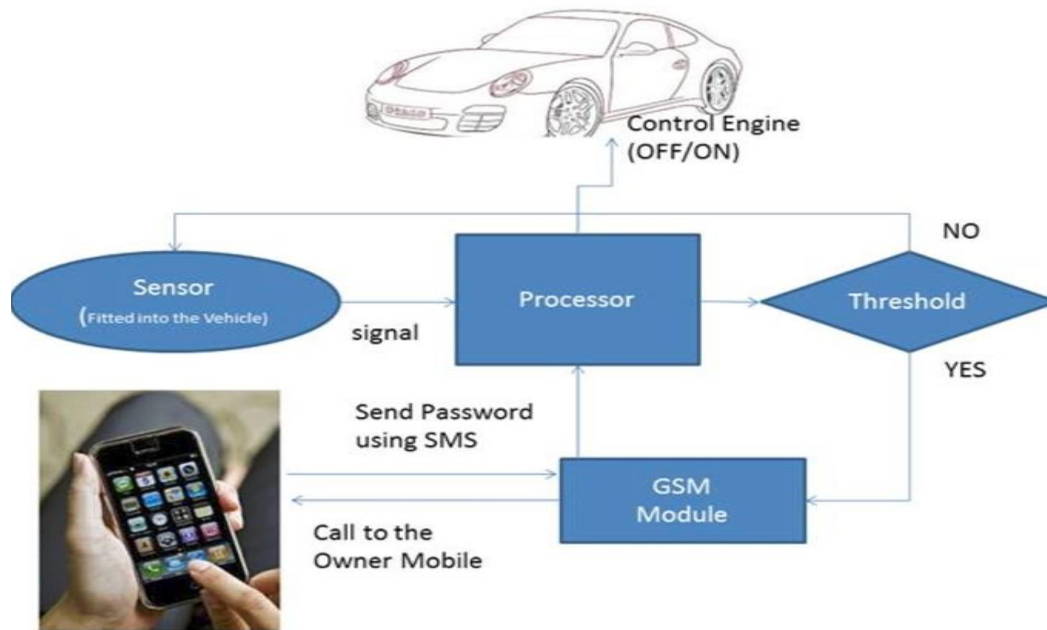


Fig. 5: Block Diagram

IX. CONCLUSION

It uses a combination of GSM and GPS devices to obtain location and vehicle status information and transmit it to other stationary modules. Action time can be minimized with the Incident Identification System and the exact location of the Incident is defined with GSM and GPS services. ambulance, police station, etc. In the anti-theft system, the main input is like an interrupt, which when received by the ARM7 processor repeats demobilizing the car, sending a text message and starting an alarm. The system is working well. The flexibility of the embedded system makes this system highly compatible with all types of vehicles. Overall, the system is very affordable for the general public and the system is easy to implement.

X. CODING

If anyone need the coding then please visit the given site.
<https://sites.google.com/view/royaleducationalsystem/home>

REFERENCES

- [1.] S.Sonica¹, Dr. K. Sathiyasekar², S.jaishree³ Intelligent accident identification system using GPS, GSM modem International Journal of Advanced Research in Computer and Communication Engineering Vol. 3, Issue 2, February 2014
- [2.] Aashish Lokhande¹, Suraj Bahe², Bipin Kumar³ Accident Identification Us-ing ARM-7, GPS and GSM Discovery, Volume 18, Number 53, May 9, 2014
- [3.] Nandaniya ,Viraj Choksi ,Ashish Patel ,M B Potdar. Ph.D Automatic Ac- cident Alert and Safety System using Embedded GSM Interface International Journal of Computer Applications (0975 8887) Volume 85 No 6, January 2014
- [4.] Visa M. Ibrahim¹. Asogwa A. Victor². S. Y. Musa³. GSM Based Antitheft Security System Using ATT Command. International Journal Of Computa- tional Engineering Research (ijceronline.com) Vol. 2 Issue. 5
- [5.] Montaser N. Ramadan, Mohammad A. Al-Khedher, Senior Member, IACSIT, and Sharaf A. Al-Kheder Intelligent Anti-Theft and Tracking System forAuto- mobiles International Journal of Machine Learning and Computing, Vol. 2, No.1, February 2012
- [6.] Ruchita J. Shah, Anuradha P. Gharge GSM Based Car Security System ISSN: 2277-3754 ISO 9001:2008 Certified International Journal of Engineering and Innovative Technology (IJEIT) Volume 2, Issue 4, October 2012 203