GSM Based Anti-Theft And Accident Prevention For Automobiles

[1]Ganesh.D, [2] Goutham .D, [3]Mr. A.Jayakumar M.E
[1,2]UG Student, [3] Associate Professor
Department Electronics and Communication Engineering
IFET College of Engineering
Villupuram, Tamilnadu

Abstract— The present condition of insecure environment causes increase in the ratio of vehicle theft, which creates a major responsibility towards manufacturers as well as owners of luxury automobile to inbuilt the anti-theft system which prevent the car from theft. Main causes behind these road accidents include: lack of training institutes, unskilled drivers, poor road conditions, use of cell phone during driving, over loading and poor governmental plans in this regard. Our research provides a solution for accident detection and prevention for human life safety. To prevent flee of thief, automatic chloroform is sprayed when intruder found. The system gives the location of the vehicle upon sending a message in case it has been theft. This system also provides an accident prevention using sensors which upon detection of person whether consumed alcohol.

Keywords—alcohol sensor, GSM modem, Anti-theft system

I. INTRODUCTION

At present, the anti-theft device on the market processes passively alarm signal in many cars. Generally, it determines safety state of automobile depending on a single signal from sensor, therefore it have some defects, such as less reliability, existing phenomenon of misreport and failing to report. These defects bring many unnecessary troubles to user. It is very difficult to identify precisely safety state of automobile using only a single sensor because automobile have many different information due to its unsafe situations we can precisely judge and describe state of automobile if we combine information from multi-sensors that are complement each other in space and time and redundant information according to a rule of optimization. An automobile antitheft and alarm system is designed using MCU as control center of this system in this paper. A GSM network is composed of several functional entities, whose functions and interfaces are specified. Figure 1 shows the layout of a generic GSM network. The GSM network can be divided into three broad parts. The Mobile Station is carried by the subscriber. The Base Station Subsystem controls the radio link with the Mobile Station. The Network Subsystem, the main part of which is the Mobile services Switching Center (MSC), performs the switching of calls between the mobile users, and between mobile and fixed network users. The MSC also handles the mobility management operations. Not shown is the Operations and Maintenance Center, which oversees the proper operation and setup of the network. The Mobile Station and the Base Station Subsystem communicate across the Um interface, also known as the air interface or radio link. The Base Station Subsystem communicates with the Mobile services Switching Center across the interface. The sensing element of gas sensors is a tin dioxide (SnO2) semiconductor which has low conductivity in clean air. In the presence of a detectable gas, the sensor's conductivity increases depending on the gas concentration in the air. A simple electrical circuit can convert the change in conductivity to an output signal which corresponds to the gas concentration.
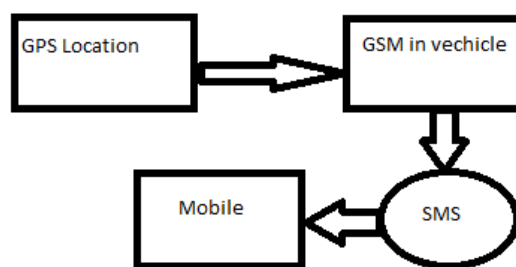

Fig.1. Communication between GPS and mobile

II. LITERATURE SURVEY

Jonas Ljungblad and Bertil Hök [1] the paper titled as "Critical Performance of a New Breath Alcohol Analyser for Screening Application Ethanol" which describes the alcohol sensor has an absorption peak at 3.3-3.5μm and a peak at 9.5μm. At the 3.3-3.5μm wavelength range there are several interfering substances, and in order to meet the selectivity requirements of the industry standard for alcohol interlocks, at least two sub-bands need to be measured. In the present sensor the strong peak at 9.5μm is being utilized. Interfering substances are still present although within.

R.Ramani, S.Valarmathy, Dr. N.SuthanthiraVanitha [2] the paper titled as "Vehicle Tracking and Locking System Based on GSM and GPS" which portrays about the system puts into sleeping mode while the vehicle handled by the owner or authorized person otherwise goes to active mode, the mode of operation changed by in person or remotely. If any interruption occurred in any side of the door, then the IR sensor senses the signals and SMS sends to the microcontroller. The controller issues the message about the

place of the vehicle to the car owner or authorized person. When send SMS to the controller, issues the control signals to the engine motor. Engine motor speeds are gradually decreases and come to the off place. After that all the doors locked. To open the door or restart the engine, authorized person needs to enter the passwords. In this method, tracking of vehicle place easy and doors locked automatically, thereby thief cannot get away from the car.

Susanta Kumar Behera Prof. Farida Asraf Ali [3] the paper titled as "Automobile Fuel Pump Control System Using Embedded System" In this paper opto slot sensor and then we will look into its usability in first lock system. The device is a simple isolating opt coupler show two other types of opt coupler. The device shown in below is known as a slotted opto coupler. And has a slot moulded into the package between the LED light source and the phototransistor light sensor. Here, light can normally pass from the LED to Q1 without significant attenuation by the slot. The opto coupling can, however, be completely blocked by placing an opaque object in the slot. The slotted opt coupler can thus be used in a variety of presence detecting applications, including end-of-tape detection, limit switching, and liquid-level detection.

Priti K. Powale, G. N. Zade [4] the paper is titled as "Real time Car Antitheft System with Accident Detection using AVR Microcontroller" which describes about security system for smart cars used to prevent them from theft using AVR microcontroller. When any authorized person enters into car then access of will be granted and if not then block the car access and the car owner will informed about the unauthorized access with the help Multimedia Message Services (MMS) by using of GSM modem. Also it can provide password authentication in such case if car owner want to give emergency access to some user whose image is not recognizable, but still it gets the access of car. In addition it can also perform accident detection in order to provide the security to the users. In that case message will be sent to owner of car and nearest police station or hospital.

III. EXITING SYSTEM

The existing system for smart cars used to prevent them from theft using AVR microcontroller. When any authorized person enters into car then access of will be granted and if not then block the car access and the car owner will informed about the unauthorized access with the help Multimedia Message Services (MMS) by using of GSM modem. Also it can provide password authentication in such case if car owner want to give emergency access to some user whose image is not recognizable, but still it gets the access of car. In addition it can also perform accident detection in order to provide the security to the users. In that case message will be sent to owner of car and nearest police station or hospital.

IV. PROPOSED SYSTEM

The proposed security system in this paper is designed to track and monitor vehicles that are used by certain party for particular purposes, also to stop the vehicle if stolen and to track it online for retrieval, this system is an integration of several modern embedded and communication

technologies. This Project also focuses on avoidance of drunken driving. Hence this system will not turn on the vehicle, when the user is in drunken condition. By implementing this system a safe journey is possible which would decrease the injuries during accidents and also reduce the accident rate due to drunken driving. To implement an efficient automotive security system for anti-theft using an embedded system occupied with a Global System of Mobile (GSM).To secure the vehicle, the user of a group of users can turn off any vehicle of the fleet if any intruders try to run it by blocking the gas feeding line. To prevent flee of thief, automatic chloroform is sprayed when intruder found.
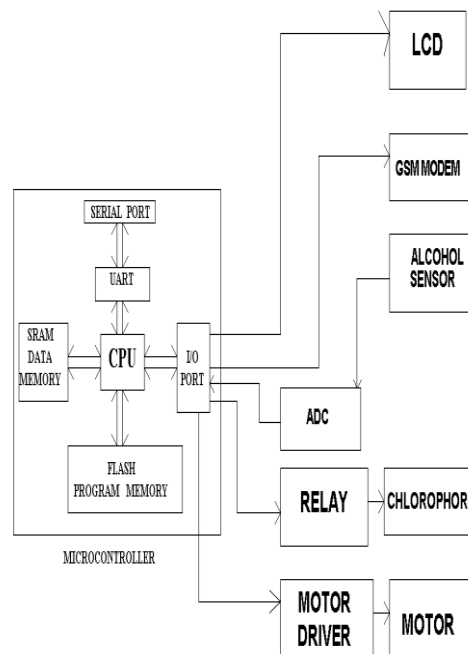
V. BLOCK DIAGRAM

Fig.2. Functional block diagram

VI. HARDWARE DESCRIPTION

The microcontroller can send a signal to the Motor to turn off and relay to spray chloroform, when received SMS contains code from owner mobile to stop it. Alcohol sensor fitted in the steering detects the alcohol in the breath and sends the level of alcohol to the Microcontroller through ADC. If level of Alcohol consumed is high, then it will automatic turn off the Motor. All the information are displayed in the LCD.

The sensing element of gas sensors is a tin dioxide (SnO_2) semiconductor which has low conductivity in clean air. In the presence of a detectable gas, the sensor's conductivity increases depending on the gas concentration in the air. A simple electrical circuit can convert the change in conductivity to an output signal which corresponds to the gas concentration.
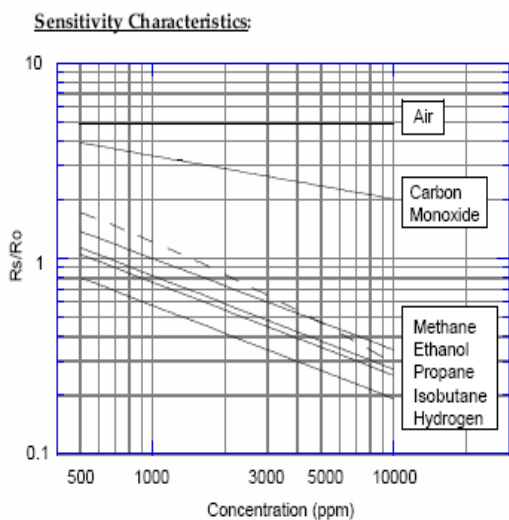
Fig.3. Sensitivity characteristics of ethanol concentration

A GSM network is composed of several functional entities, whose functions and interfaces are specified. Figure 1 shows the layout of a generic GSM network. The GSM network can be divided into three broad parts. The Mobile Station is carried by the subscriber. The Base Station Subsystem controls the radio link with the Mobile Station. The Network Subsystem, the main part of which is the Mobile services Switching Center (MSC), performs the switching of calls between the mobile users, and between mobile and fixed network users. The MSC also handles the mobility management operations. Not shown is the Operations and Maintenance Center, which oversees the proper operation and setup of the network. The Mobile Station and the Base Station Subsystem communicate across the Um interface, also known as the air interface or radio link. The Base Station Subsystem communicates with the Mobile services Switching Center across the A interface.
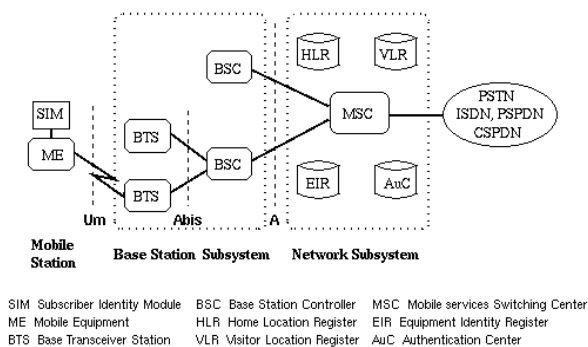

Fig.4. Communication between mobile station to PSTN

In our project microcontroller AT89C52 (Target processor) is used to governs all the essential process which has to be executed during acquisition. Microcontroller, as the name suggests, are small controllers. These are like single chip computers that are often embedded into systems to function as processing /controllers unit. For example, the remote control you are using probably has microcontrollers inside that do decoding and other controlling functions. They are also used in automobiles, washing machines, microwave ovens, toys…etc., where automation is needed. The key features of microcontrollers include:

High integration of Functionality: Microcontrollers sometimes are called single chip computers because they have on-chip memory and I/O circuitry and other circuitries that enable them to function as small standalone computers without other supporting circuitry.

Field Programmability, Flexibility: Microcontrollers often use EEPROM or EPROM as their storage device to allow field programmability so they are flexible to use. Once the program is tested to be correct then large quantities of microcontrollers can be programmed to be used in embedded systems.

Easy to Use: Assembly language is often used in microcontroller and since they usually follow RISC architecture, the instruction set is small. The development package of microcontrollers often includes an assembler ,a simulator ,a programmer to " burn " the chip and a demonstration board .Some packages include a high level language compiler such as a C compiler and more sophisticated libraries.

VII. CONCLUSION

A cost effective, simple, miniature and robust GSM based anti-theft security system has been successfully designed and constructed. This system avoids flee of thief and monitor the vehicle position thus the system is effective and efficient. This system provides complete solution for the fraudulent activities. The proposed system can be further updated using future technologies for the development.

REFERENCES

[1] Jonas Ljungblad and Bertil Hök, Mikael Ekström "Critical Performance of a New Breath Alcohol Analyzer for Screening Applications", 2014 IEEE Ninth International Conference on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP) Symposium on Sensor Performance Characterization Singapore, 21–24 April 2014.

[2]R.Ramani, S.Valarmathy, Dr. N.SuthanthiraVanitha Vehicle Tracking and Locking System Based on GSM And GPS" Published Online August 2013 in MECS 2013.09.10

[3] Susanta Kumar Behera Prof. Farida Asraf Ali the "Automobile Fuel Pump Control System Using Embedded System", International Journal of Computer Technology and Electronics Engineering (IJCTEE) Volume 3, Issue 2, April 2013.

[4] Priti K. Powale, G. N. Zade "Real time Car Antitheft System with Accident Detection using AVR Microcontroller" Volume 2, Issue 1, January 2014 International Journal of Advance Research in Computer Science and Management Studies