Anti-Theft Car Security System Using Microcontroller

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Abstract: In today's era vehicle is very important ingredient in our daily life. Almost every person own a vehicle but the problem is that these vehicle gets theft even from our parking place. These days vehicle robbery cases are higher than any other time. Robbers forcefully grab our vehicles on gun point inspite of that the vehicle have already some security system like ignition control system, door lock system alarm system etc.so its security getting difficult day by day.In order to resolve these problem our proposed system may be implemented. The main objective of our project is that to provide the security to that vehicle by controlling the flow of fuel from fuel tank to engine of vehicle using GSM and GPS system, which may be able to prevent the vehicle from unauthorized access. The flow of fuel will be lock or unlock by sending SMS which is controlled by the owner using GSM mobile. The proposed system is also designed using the GPS to determine the precise location of vehicle and transmit the information through GSM. This security system contain GPS, GSM, micro-controller, motor-driver, electronic valve etc.

Keywords: Global positioning system (GPS), global system for mobile communications (GSM), microcontroller 8051, motor driver, directional valve.

I. INTRODUCTION

Nowadays car is one of the most useful vehicle. Most of the population is dependent on the car vehicle. According to their privilege they prefer car and so they have to pay more money for that. According to Open Government Data (OGD), the total number of registered motor vehicle in India is 210023289 as on 31/03/2015.[1] It will be cruel imagination if someone has stolen or robbed/rend his vehicle. This will happen only due to acute shortage of parking space and the general practice of leaving vehicle on the roadside as well as the unwillingness of amajority of motor vehicle owner to install anti theft equipment are all major contributing factor in vehicle theft cases. [3]

Using emerging technology a number of security system has been developed for detection of car thefts and its tracking the locations of cars. There is some electronic system which gives the information about the vehicle and its security too like NMVTIS.Despites of the development of these security system vehicles has been theft easily from the parking area. According to national Crime Information Centre the losses are in Billions because of stolen. cars

only, which is very huge loss for our developing nation.[2]This report cleared that so many cars has been stolen yearly in the country and the numbers are increasing day by day. The main reason behind the drawback of these types of security system is that these systems are localized around that system onlyi.e.; the owner should be there nearer to the vehicle. Then only he/she can prevent his vehicle from the theft.Because in this system owner can not handle his car from a far distance. They do not let communicate with its car even if the owner knows that his car has been stolen and so he is not able to find out the approximate location of his car when it is driven by someone else.

The remedies of these all problems may be resolved by our proposed system in which system permits localization of the automobile and transmitting the position of car on his/her mobile phone as a short message (SMS) as his/her respective request .In case of vehicle theft situation, the vehicle owner can stop the car by sending a predefined message to the system. After receiving SMS from the car owner this system automatically stop the fuel, so it will not function anymore.

II. PROPOSED METHODOLOGY

This security system is combination of hardware and software development project. It is used to give the security to all the vehicles. Since it is using GSM mobile phone, so its range is quite high.

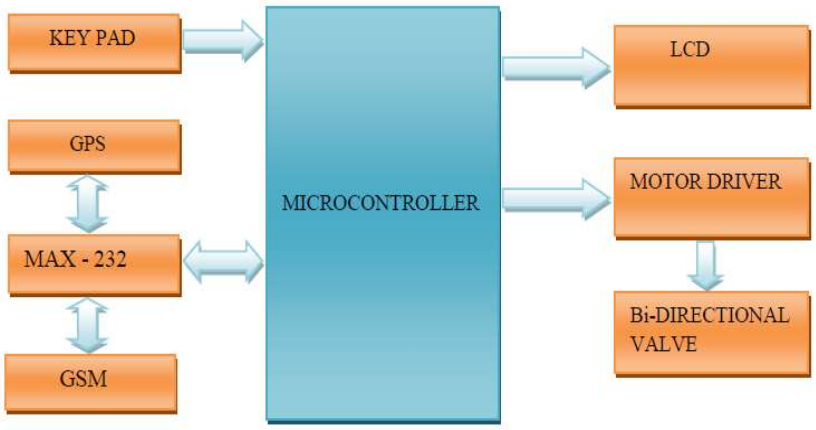


Fig.1 Block Diagram

This is the block diagram (fig.1) of the system design. It includes the different components which are used in this security system. Our proposed system has multilevel security.Firstly the person which has to access the car by car key first dial the password, which is predefined for the microcontroller. If the password is wrong then the power of car will remained OFF their ignition system fuel pump and other system will not be activated till the correct password is not dialed,so no one can't be access the car by stolen key without correct password. Assuming that thief or non-authorized person wants to run the power of car directly by connecting starter motor to engine externallyinspite of that car will not turned on because fuel path is blocked by directional path,now no fuel is pumped into the engine.

Now in case during travelling on a deserted road and robbers wants to rob your car on a gun point and you have no option inspite of giving keys and right password and surrender yourself then in this severe case also you can prevent

your car from being robbed. Owner of the car will send a message by a GSM mobile phone through GSM model to switch off the flow of fuel path from fuel tank to engine, then to confirm the authorized access of the system, the system check the mobile number of the received message. If number is verified then the system will turned off the directional valve(fig.2) by doing so the speed of car is slowed down when fuel will not reached to the engine and finally car stopped down and then it will not get turned on.

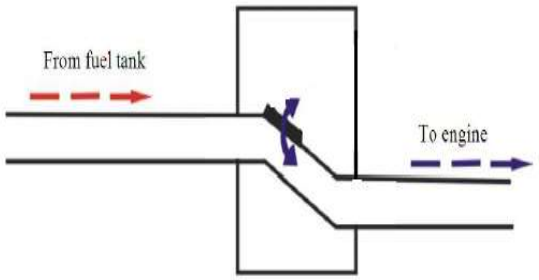


Fig.2 Solenoidal Directional Valve

For reopening of this bidirectional valve the owner or authorized person will have to send the code from the registered number then motor driver will reopen the valve.

In this security system the approximated location of car can be befetched. Car tracking becomes easier using this GPS technology. If the owner needs to track the vehicle, he/she has to send the code by GSM mobile phone after that phone will receive the message containing the approximated information of latitude and longitude. By putting these latitude and longitude codes on GOOGLE map he/she can get the location of their car.

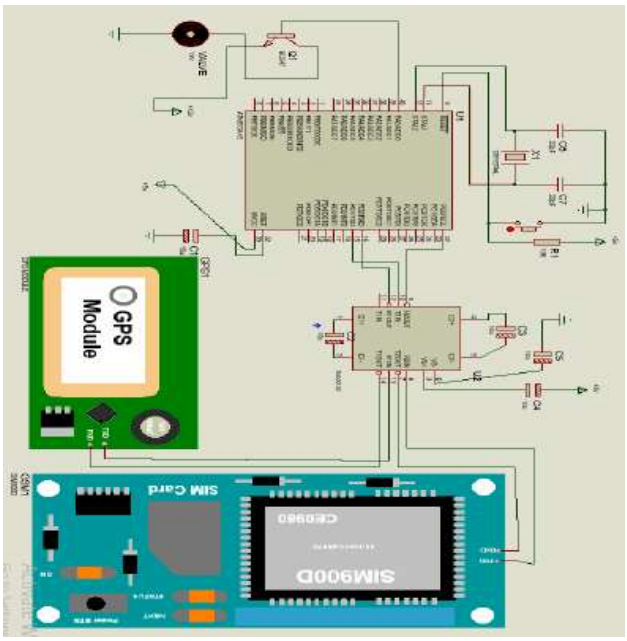


Fig.3 Circuit diagram

This is the circuit diagram (fig.3) of our proposed model. In this diagram all the pins of microcontroller ATMEGA16 and MAX232 are clearly shown. It is clear from the circuit that GPS and GSM models are not directly connected to the microcontroller, it first connected with MAX232 which is connected to the microcontroller. Motor driver is connected with microcontroller which guided the directional valve.

This is the assembled figure of our proposed security system (fig.4) in which all components (GPS, GSM, motor fdriver, AVR development board 28 pin and micro controller) are connected in desired manner.

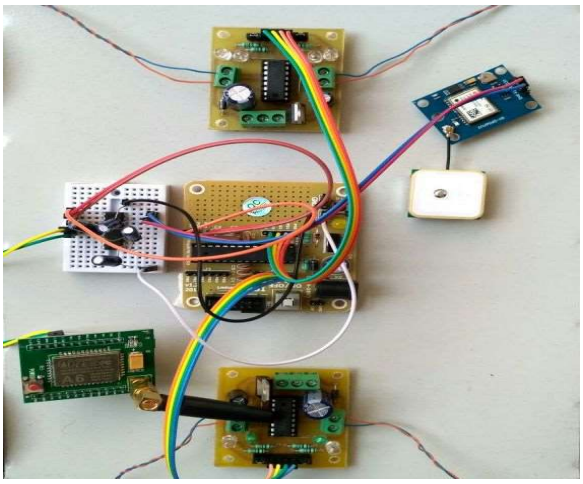
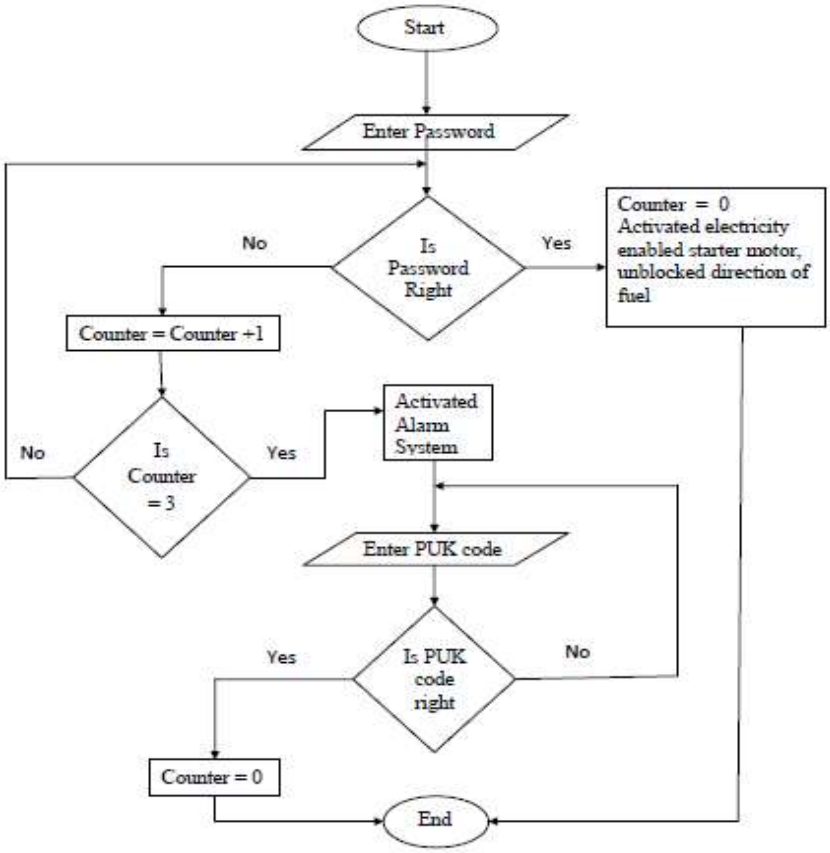


Fig.4 Assembled Hardware of Security System

III. SOFTWARE DESIGN

When the user wants to access the car and the entered password is wrong, then he is able to re-enter for maximum of three error entries, after that the system is activated and the system will be locked the user needs to enter a special code (PUK:Personal Unblocking Key), through which the user can reset the system[4].



IV. CONCLUSION

In this paper we have proposed a security system model which is advanced than the previous anti-theft model. In this system the engine of car will turned off from the very far distance by blocking the fuel path. Also no one can access the car without knowing the exact password of the system. Car owner can easily track the exact location of their car by GPS in case of car theft. It is very inexpensive and effective.

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