Design and Development of a Vehicle Theft Control Unit using GSM Module

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***Abstract*—Main purpose of this project is the design & development of a vehicle theft control system, which is used to prevent the theft of a vehicle. The developed system is used by an embedded system based on Global System of Mobile communication (GSM) technology. The developed system is used by an mobile phone that is embedded in the vehicle with an interfacing to Engine Control System(ECS) which is in turn, communicated to the ECS. In that project we deal with the security of the vehicle. When the GSM modem receives this message from the particular mobile then the vehicle. Engine gets stopped .The mobile number from which the message is sent, should be the authorized mobile number. The authorized mobile number should be fed into this system through the keypad and the number which is stored in the EEPROM. The system can be implemented using arduino. This is more secured, easily available and also low cost.**

***Keywords*— vehicle theft control system,, GSM, , Mobile phone, Engine Control System, EEPROM**

A. INTRODUCTION

Now days, India has progressed at such an enormous rate that many companies have established in India for arranging transportation. This transport has been arranged through the local transport vendors on a yearly contract basis, because of recently happen mishaps such as burglary, security challenges are too essential. GSM Based System is one of the most important systems for Vehicle security.

It is used in ambulances, fleets and police vehicles. Systems. This system designed for users in transport business. This vehicle security *control system, which is used to prevent the theft of a vehicle* and rescue device. Vehicle security systems accepted in vehicles as a theft prevention and retrieval device. If the theft identified, the system sends SMS to the vehicle owner. Then vehicle owner sends the SMS to the controller to stop the vehicle.

B. Survey of the Related Work

In [1], Kai-Tai Song and Chih-Chieh Yang designed a real-time tracking system for vehicle safety applications. In this paper built vehicle-tracking algorithm, automatically detect and track several moving objects,.

[2], This system provided vehicle security based on embedded system .The SMS sends to the authorized person through the GSM module. The IR Sensor is used to detect the static obstacle in front of the vehicle and the vehicle is stopped if any obstacle is detected. This is used for avoiding accidents due to collision of vehicles with any obstacles.

[3], Face Detection System is used to detect the face of the driver, The car owner is sleeping during night time and anybody theft that car. Then Face Detection System takes images by one tiny web camera, which is hidden easily in car. Face Detection System compared this images with the stored images. If the images don't match, then the MMS sends to the owner . The owners get this images of that thief in mobile phone and also trace that place through GPS. This system is applied in our regular life.

[4], The hardware and software of the GPS and GSM module were developed. The GPS/GSM based System has two parts, first is a mobile unit and another one is controlling station. The system processes, data transmission and reception of data among the mobile unit and control stations work successfully. These results are compatible with GPS system.

[5] Vehicle tracking system is an electronic device which is installed in a vehicle to enable the owner This is proposed to design a vehicle tracking system which is worked using GPS and GSM module. This system is built which is based on embedded system .It is used for tracking and positioning of any vehicle by using Global Positioning System (GPS) and Global system for mobile communication (GSM).

C. Proposed Method

In this proposed work, a novel method of vehicle security system is used to protect the vehicle theft by using GSM module. This system puts into sleeping mode while the vehicle is handled by the authorized person. If any interruption is occurred in any side of the door of vehicle or starts the vehicle and sensor senses this signals and SMS sends to the authorised person by microcontroller & GSM module. When person sends SMS to the controller then signals control the engine motor. Engine motor speeds are decreases and stop. After that all the doors are locked. To restart this engine, authorized person needs to send a sms In this method, protection of vehicle is easy and doors are locked automatically, thereby thief cannot be able to get away from the car.

D. **Block Diagram**

The Block diagram of Vehicle security system based on GSM module. It consists the power supply section, keyboard, GSM module, microcontroller, arduino.The GSM board has a valid SIM card to send SMS authorized person. The circuits is powered by +5v Dc adapter.

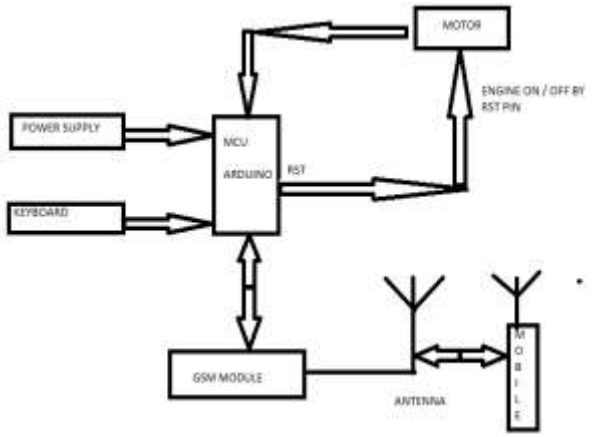
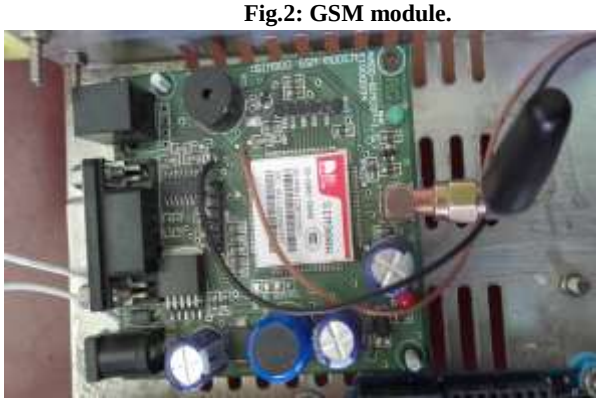


FIG.1:BLOCK DIAGRAM OF VEHICLE SECURITY BASED ON GSM MODULE.

E. GSM Modem SIM300 V7.03

All The GSM module is a specialized type of modem which accepts a SIM card of authorized mobile number over a network. Modem sim300 is a triband GSM module that works on EGSM900MHz, DCS1800MHz and PCS1900MHz frequencies.GSM Modem is RS232-logic level compatible, that takes-3v to -15v as logic high and +3v to +15 as logic low.MAX232 is used to convert between the microcontroller and the GSM board. The signal at pin 11 of the microcontroller is sent to the GSM modem through the pin 11 of max232.this signal is received to pin2 (RX) of the GSM modem. The GSM modem transmits this signal from pin3 (TX) to the microcontroller through MAX232.It is received at pin 10 of IC1

Fig.2: GSM module.



F. System Modeling

When engine starts microcontroller initialize GSM module then sends SMS to the authorized person. When person sends SMS to the controller through antenna & GSM module then signals control the engine motor.

This system puts into sleeping mode while the vehicle is handled by the authorized person. Engine motor speeds are decreases and stop if it is handled by any other unauthorised person. After that all the engines are locked. To restart this engine, authorized person needs to send a SMS

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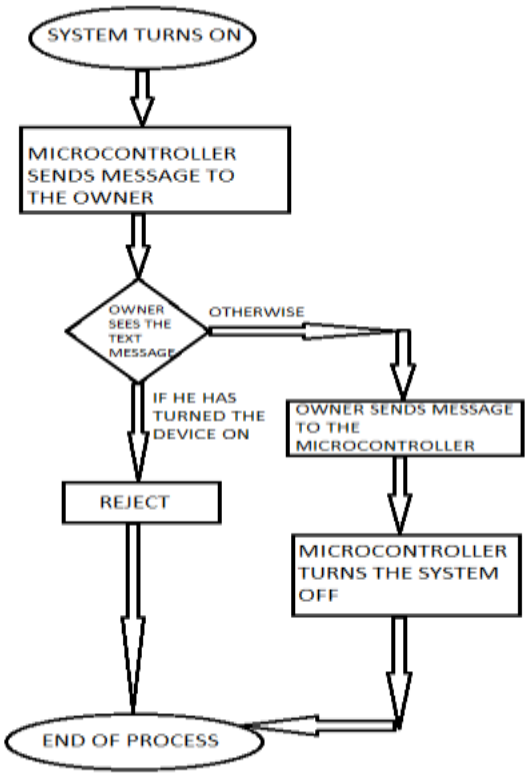

Fig 3: Activity Diagram for Vehicle Security system.

G. Experimental Result

The implementation of vehicles theft control system using GSM Module is done successfully. The communication is properly executed between different modules in the design. Design is done to meet all the specifications and requirements. Software tools Arduino.ide- 1.6 simulator, used to dump the source code into the microcontroller.

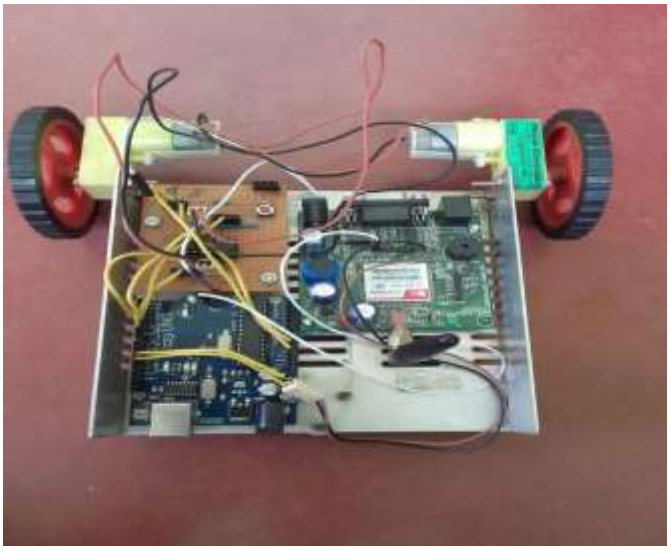

Fig 4: Hardware part of project

When engine/car starts "help" message sent to the owner by the GSM embedded in the control unit, If Owner find unauthorized person starting the engine he instantly send a message "A" to GSM module connected to the vehicle engine which will stop the engine & reset or lock the system.

H. Conclusion

The developed system in this paper for avoiding vehicle theft makes use of a GSM module that is embedded in the vehicle with an interfacing to authorised mobile phone through GSM. The vehicle/engine being started , can be stopped by using mobile phone and this information is used by the owner of the vehicle for future processing. The owner sends the message to the GSM module which is embedded in the vehicle which has been stolen/started by any unauthorised person which in turn controls the vehicles engine by locking the working of the engine immediately. The developed system accept the message and broadcasted to the Vehicle Network through GSM module. The engine can be unlocked only by the owner of the vehicle by sending the message through GSM module . The goal of design is to develop security of vehicles and embedded system to communicate with engine of the vehicle.

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