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Vehicle Theft Detection, Accident Detection and Tracking Using Gsm and Gps

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ABSTRACT :

Currently most of the public having their own vehicle, theft is happening on parking places and sometimes driving insecurity places. The safe of vehicles is extremely essential for public vehicles. Vehicle tracking and locking system is installed in the vehicle, to track the place and locking engine motor using GSM and GPS. Along with vehicle theft detection, Now-a-days lots of accidents happen on highways due to increase in traffic and also due to rash driving of the drivers. Most of the times we may not be able to find accident location because we don't know where accident will happen. So in this project along with theft detection, we can also detect accident detection and intimate to owner by sending SMS using GSM and GPS.

Key Words:-Vehicle Tracking, Locking, accident detection, Microcontroller, GSM, GPS.

I.INTRODUCTION

As everyone in this competitive world prefers to make the things easy and simple to handle, this project sets an example to some extent. In this paper we deal with the security of the vehicle. Automobile thefts and the production of vehicle are increasing in yearly world. So, vehicle theft is a universal problem. To solve this problem, most of the vehicle owners have started using the theft protection systems.

When a person tries to steal the vehicle, the microcontroller in it is interrupted and the command is to be sent to the GSM modem to send SMS. On the receipt of the message, the owner sends back the SMS to the GSM modem. This is done in order to stop the engine.

Road accidents constitute the major part of According to the Insurance Institute for Highway Safety (IIHS), new cars and its high-tech safety features have helped to lessen auto related deaths over the past 12 years. To avoid that Automatic vehicle accident detection and messaging system is an embedded intelligence implanted into the automobile. The purpose of the project is to find the vehicle where it is and locate the vehicle by means of sending a message using a system which is placed inside of vehicle system.

So in this work we are using the basic microcontroller AT89S52 for cost effective and also for easy understanding. Here we used assembly programming for better accuracy and GPS and GSM modules which helps to trace the vehicle anywhere on the globe. The exact location of the vehicle is sent to our remote devices (mobile phones) using GSM modem.

II. LITERATURE SURVEY

In recent years, vehicle thefts are increasing at an alarming rate around the world. In recent years, vehicle thefts are

increasing at an alarming rate around the world. The GPS tracking and GSM alert based algorithm is designed and implemented with AT89C52 micro controller in embedded system domain. EEPROM is interfaced to store the mobile numbers permanently. The main concept in this design is introducing the GSM and GPS Technologies into the embedded system. The designed unit is very simple & low cost. The entire designed unit is on a single chip. When the vehicle is stolen, owner will give a call to the kit placed in vehicle engine automatically stop which is indicated by the DC motor in turn sends the SMS to the authorized person showing the exact location using GPS.

The Rapid growth of technology and infrastructure has made our lives easier. The advent of technology has also increased the traffic hazards and the road accidents take place frequently which causes huge loss of life and property because of the poor emergency facilities. In highly populated Countries like India, everyday people lose their lives because of accidents and poor emergency. These lives could have been saved if medical facilities are provided at the right time. This paper implies system which is a solution to this drawback by providing exact accident location immediately send to owners registered number s using GSM and GPS.

A vehicle tracking system is an electronic device, installed in a vehicle to enable the owner or a third party to t rack the vehicle's place. This paper proposed to design a vehicle tracking system that works using GPS and GSM technology. This system built is based on embedded system, used for tracking and positioning of any vehicle by using Global Positioning System (GPS) and Global system for mobile communication (GSM). This design will continuously watch a moving vehicle and report the status of the vehicle on demand.

III. PROPOSED METHOD IMPLEMENTATION

In this paper deals with the design & development of a theft control system for an automobile, which is being used to prevent / control the theft of a vehicle and also describes about the automatic accident detection and messaging system using GPS and GSM technologies. The designed & developed System is installed in the vehicle. An interfacing GSM MODEM and the GPS which are connected to the microcontroller, which is in turn, connected to the engine. Once, the vehicle is being stolen, the information is being used by the vehicle owner for further processing. GSM modem that is with the hardware kit which is installed in the vehicle. By reading the signals received by the mobile phone, the engine is locked automatically and sends the SMS to the dialled number stating the exact position using GPS modem.

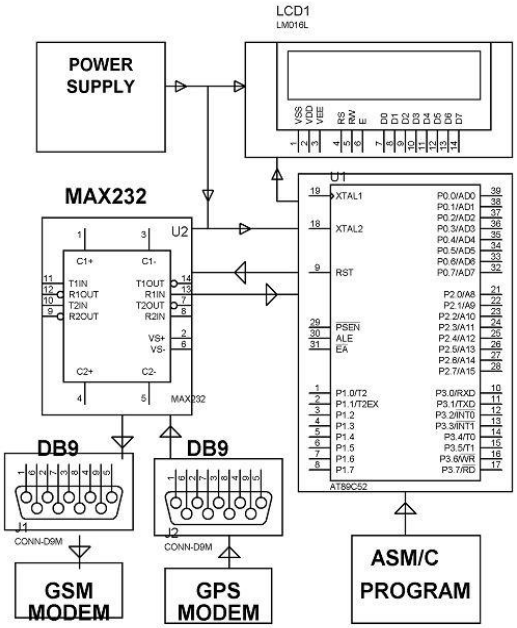
The main concept in this design is introducing the GSM and GPS Technologies into the embedded system. The designed unit is very simple & low cost. The entire designed unit is on a single chip. When the vehicle is stolen , owner will give a message to the kit placed in vehicle engine automatically stop which is indicated by the DC motor in turn sends

the SMS to the authorized person showing the exact location using GPS.

Our paper describes about the Automatic vehicle accident detection and using GPS and GSM technologies. We are using AT89C52 microcontroller in our project. When the system is switched on, LED will be ON indicating that power is supplied to the circuit. When the IR sensors that we are using in our project sense any obstacle, they send interrupt to microcontroller. The GPS receives the location of the vehicle that met with an accident and gives the information back. This information will be sent to a registered mobile number through a message. This message will be received using GSM modem present in the circuit. The message will give the information of longitude and latitude values. Using these values the position of the vehicle can be estimated.

Iv. Methodlogy

Block Diagram :



Block diagram explanation :

A GPS modem is used to get the signals and receive the signals from the satellites. In this project, GPS modem get the signals from the satellites and those are given to the microcontroller. The signals may be in the form of the coordinates these are represented in form of the latitudes, longitudes and altitude. A GSM modem is used to get the messages from the mobile and as well as reading the message also. There after sending the acknowledgement will be done. Before operating this GSM modem first we have to insert the SIM card in this modem. Then the total receiving and sending the messages will be done based on this number. First the concerned person has to register for that number and second one is viewing and controlling section the vehicle like tracking and blocking.

In this system mainly we have microcontroller, power supply, LCD, GSM, keypad. By that particular keypad of keys only we are sending request for track and blocking of vehicle. Here we two switches one for sending request for tracking the vehicle location and another for blocking the vehicle.

A Micro controller is a heart of this project. The total controlling action will be done through this microcontroller. Based on the signals given to the microcontroller that will be controlled at the output section. Based upon receiving the signals, the micro controller will switched-off the ignition part of that vehicle. Then the vehicle does not move at any inch. An ignition switch plays the key role in the vehicle, for moving. In this project, for

completely stopping the vehicle we are just switched-off the ignition switch with the help of the micro controller.

A LCD display is used at the output section. To display the status of the GSM and GPS and the maximum power supply required to operate the hardware circuitry is +5v dc voltage.

V. SOFTWARE SPECIFICATIONS

- Kiel µVision IDE
- MC Programming Language: Embedded C

VI.SOFTWARE PROGRAM

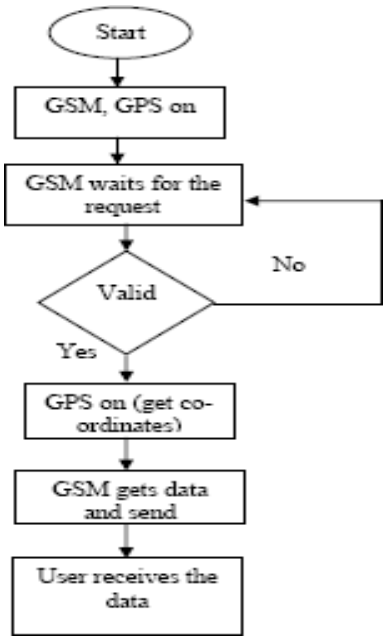


Figure : Program flow chart of tracking system

The software programming is done in 'C 'language. Data(co-ordinates) received by GPS from the satellites is defined in the software. Decoding the NMEA (National Marine Electronics Association) protocol is the main purpose of developing this software. The mobile number of the user should be included in the software programming in order to receive the location values from the SIM card which we are using in GSM modem. The NMEA protocol consists of set of messages. These messages are ASCII character set. GPS receives data and present it in the form of ASCII comma – delimited message strings. '$' sign is used at the starting of each message. The software protocol consists of the GGA (global positioning system fixed International Journal of Computer Science, Engineering and Applications (IJCSEA) Vol.3, No.3, June 2013 37 data) and GLL (geographic position latitude/longitude). But in this system we are using CGA only.

VII.RESULTS AND ANALYSIS

Fig.A: Initial Message

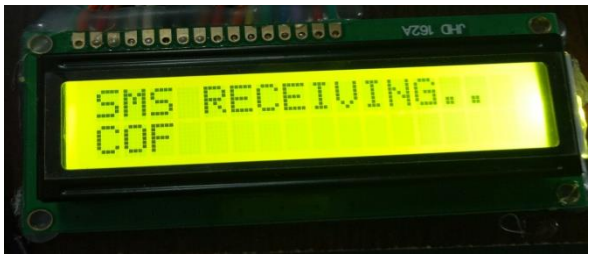


Fig.B : Stop Command(COF)

Fig.C : Vehicle Location

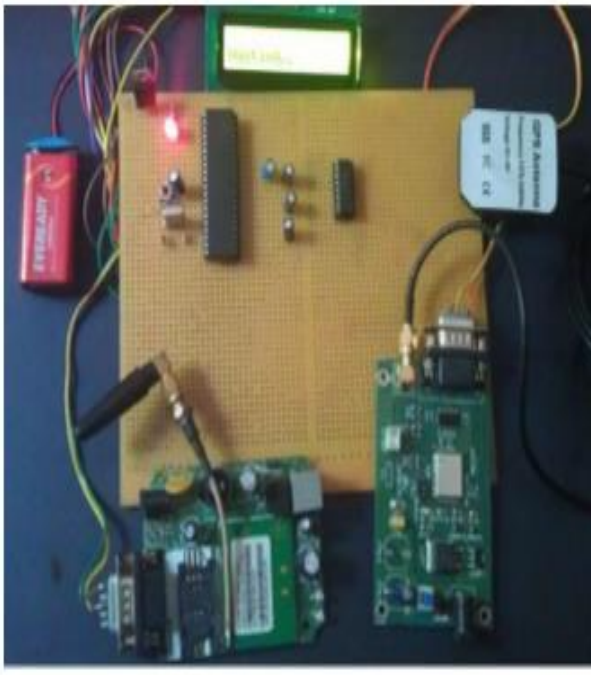
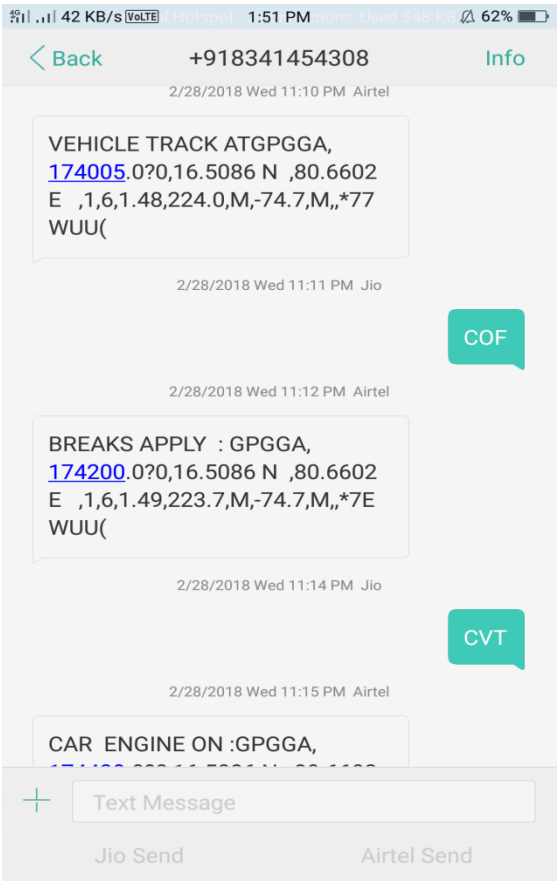


Fig.D : Hardware kit



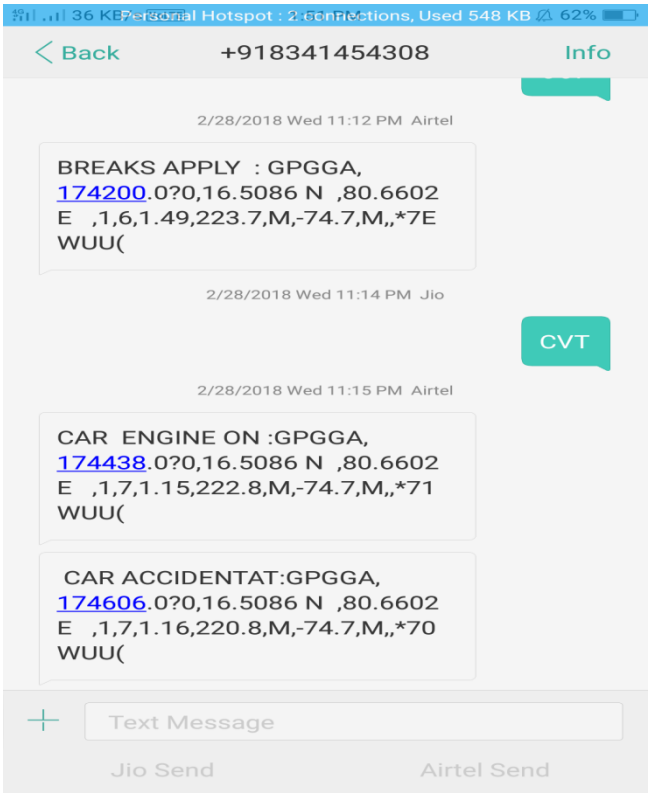


Fig.E : Message Information

VIII .CONCLUSION

In this project, we have successfully designed vehicle theft detection, accident detection and tracking system by using GSM and GPS. In this paper, we have proposed a novel method of vehicle tracking and locking systems used to track the theft vehicle by using GPS and GSM technology. When the theft identified, the responsible people send SMS to the micro controller, then issue the control signals to stop the engine motor. After that all the doors locked. In this method, easily track the vehicle place and doors locked. When accident occurs, it senses by PUSH ON SWITCHES. The coordinates of location of accident obtained by GPS, are sent via GSM network to user defined mobile number. The proposed method is verified to be highly beneficial for the automotive industry.

Future scope

1. This system can be interfaced with vehicle airbag system that prevent vehicle occupant from striking interior objects such as the steering wheel or window.

2. This can also be developed by interconnecting camera to controller module that takes the photographs of the accident spot that makes the tracking easier.

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