# Arduino Based Woman Safety Security System

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**ABSTRACT - The vehicle tracking system uses GPS and GSM to track and provide complete location information to user over mobile phone is a total security and fleet management solution. It is the technology used to determine the location of a vehicle using different methods like GPS and other navigation system operating via satellite and ground based stations. Modern vehicle tracking system use GPS technology to monitor and locate the vehicle anywhere on earth, but sometimes different types of automatic vehicle location technology are also used. The vehicle tracking system is fitted inside the vehicle that provides effective real time location and the data can even be stored and downloaded to a computer which can be used for analysis in future. This system is an essential device for tracking car any time the owner wants to monitor it and today it is extremely popular among people having expensive cars, used as theft prevention and recovery of the stolen car. The data collected can be viewed on electronic maps through internet and webpage.**

**Keywords: GPS,GSM,**

## I. INTRODUCTION

Introduction In the last few decades, India has progressed at such an enormous rate that many companies have strongly established themselves here. These companies bring a huge amount of workforce with them. Arranging transportation to such a huge mass is a cumber. Some task involving many intricacies. Generally, this transport is arranged through the local transport vendors on a yearly contract basis, recently happen mishaps such as burglary, rape cases etc. The development of satellite communication technology is easy to identify the vehicle locations. Vehicle tracking systems have brought this technology to the day-to-day life of the common person. Today GPS used in cars, ambulances, fleets and police vehicles are common sights on the roads of developed countries. All the existing technology support tracking the vehicle place and status The GPS/GSM Based System is one of the most important systems, which integrate both GSM and GPS technologies. It is necessary due to the many of applications of both GSM and GPS systems and the wide usage of them by millions of people throughout the world. This system designed for users in land construction and transport business, provides real-time information such as location, speed and expected arrival time of the user is moving vehicles in a concise and easy - to- read format. This system may also useful for communication process among the two points. Currently GPS vehicle tracking ensures their safety as travelling. This vehicle tracking system found in clients vehicles as a theft prevention and rescue device. This system installed for the four wheelers, Vehicle tracking usually used in navy operators for navy management functions, routing, send off, on board information a security. The applications include monitoring driving performance of a parent with a teen driver. Vehicle tracking systems accepted in consumer vehicles as a theft prevention and retrieval device. If the theft identified, the system sends the SMS to the vehicle owner.

## II. LITERATURE SURVEY

In this project Arduino Uno is used because earlier vehicle tracking system was based on very complicated and high cost microcontroller like 8051 with programming kit, ARM, etc. The main advantage of Arduino is low cost and easy to program it is also compatible with all the three operating system (Windows ,Mac, Linux) that's why Arduino is better and further information about Arduino is given below- Arduino is an open source, computer hardware and software company, project, and user community that designs and manufactures microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical world. GSM is referred by mobile communication magazine and the international journal of recent scientific research LCD is used in our project to get the feedback from the system and the system is working properly or not. it also used to display longitude and latitude of the vehicle all the basic information of the lcd is been taken from the mazidee and interfacing of Arduino with lcd is taken from Arduino website.

The device descried here is a self defense system specially designed for women in distress to help them to protect themselves. This device can be fitted in a purse, belt or fitted to the girl"s sandals and the panic button attached to the belt. The lady in danger can activate the system by

pressing emergency button on belt or tilting her sandal. It is a simple and easy to carry device with wide range of features and functionality. [2] The basic approach is to intimate instant location and a distress message to the cops and registered number like parents, friends, media, and women cell etc. so that unfortunate incidents would be averted and to provide real time evidence for swift action against the perpetrators of crime against women. [4]

The block diagram of the conceptual system is shown in below figure. The microcontroller acts as an embedded computing system and controls the activities of all the sub-systems. It is interfaced with Emergency Switch, Analog to Digital Converter (ADC), 3-Axis MEMS Accelerometer, Pressure Sensor, Body Temperature Sensor, GPS Receiver, GSM MODEM, Speech Circuit, High Voltage Shock Circuit.
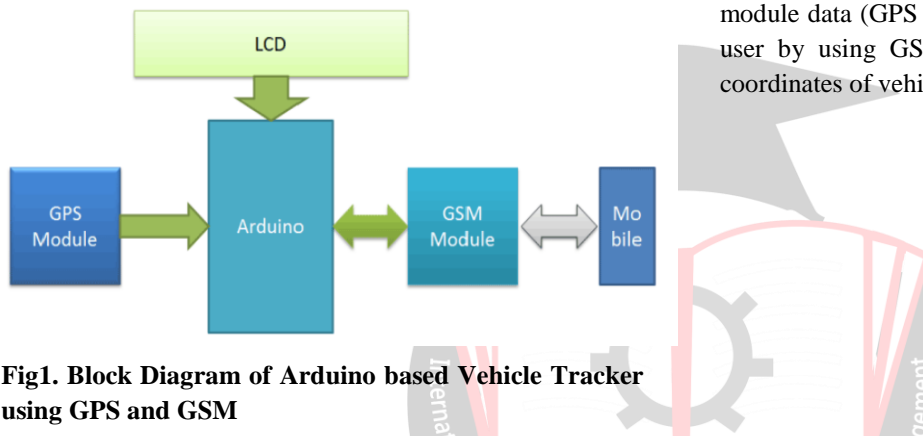
## III.    SYSTEM ARCHITECTURE



**Fig1. Block Diagram of Arduino based Vehicle Tracker using GPS and GSM**

In this project, Arduino is used for controlling whole the process with a GPS Receiver and GSM module. GPS Receiver is used for detecting coordinates of the vehicle, GSM module is used for sending the coordinates to user by SMS. And an optional 16x2 LCD is also used for displaying status messages or coordinates. We have used GPS Module SKG13BL and GSM Module SIM900A.When we are ready with our hardware after programming, we can install it in our vehicle and power it up. Then we just need to send a SMS, "Track Vehicle", to the system that is placed in our vehicle. We can also use some prefix (#) or suffix (*) like #Track Vehicle*, to properly identify the starting and ending of the string. GSM module which is connected to the system and sends message data to Arduino. Arduino reads it and extract main message from the whole message. And then compare it with predefined message in Arduino. If any match occurs then Arduino reads coordinates by extracting $GPGGA String from GPS module data (GPS working explained above) and send it to user by using GSM module. This message contains the coordinates of vehicle location.
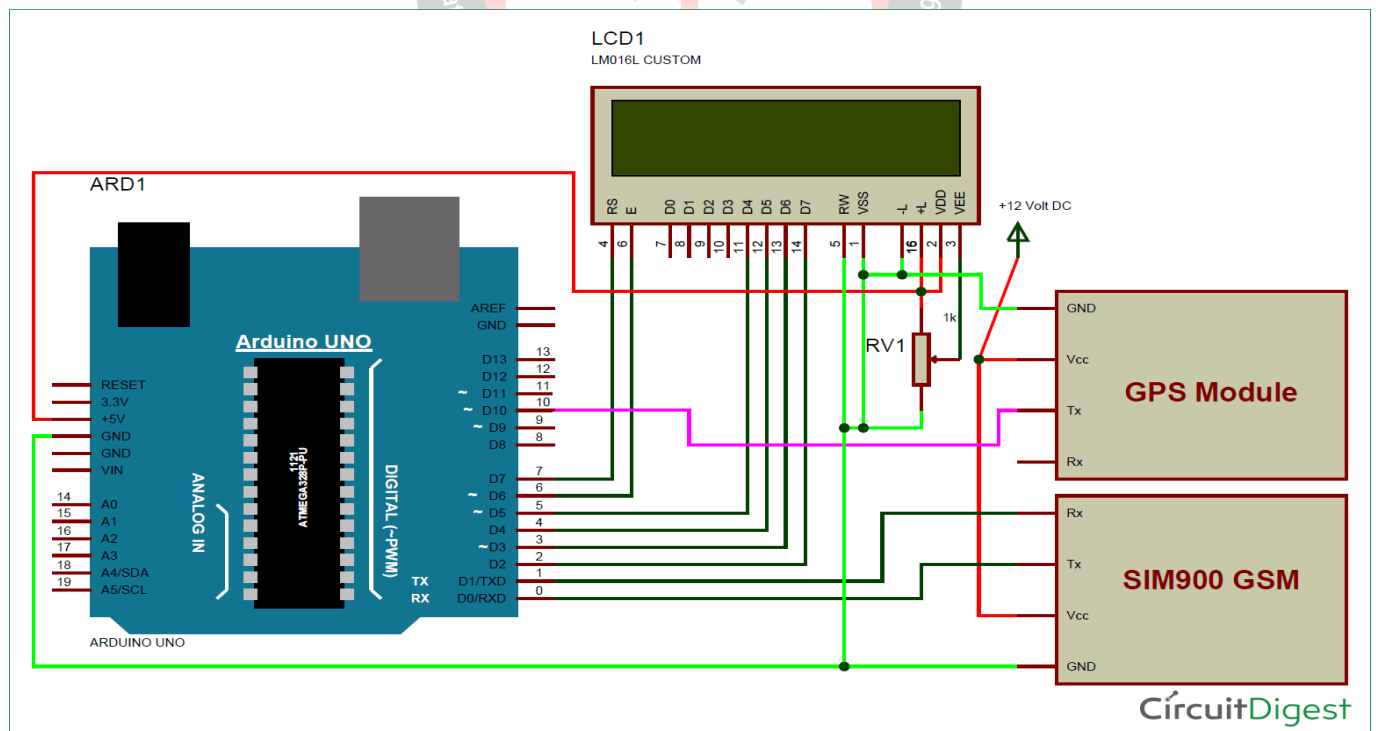


**Fig.2 Circuit Diagram of Arduino based Vehicle Tracker using GPS and GSM**

**Working:** Here Tx pin of GPS module is directly connected to digital pin number 10 of Arduino. By using Software Serial Library here, we have allowed serial communication on pin 10 and 11, and made them Rx and Tx respectively and left the Rx pin of GPS Module open. By default Pin 0 and 1 of Arduino are used for serial

communication but by using Software Serial library, we can allow serial communication on other digital pins of the Arduino. 12 Volt supply is used to power the GPS Module. GSM module's Tx and Rx pins of are directly connected to pin Rx and Tx of Arduino. GSM module is also powered by 12v supply. An optional LCD's data pins D4, D5, D6 and D7 are connected to pin number 5, 4, 3, and 2 of Arduino. Command pin RS and EN of LCD are connected with pin number 2 and 3 of Arduino and RW pin is directly connected with ground. A Potentiometer is also used for setting contrast or brightness of LCD.

## IV. RESULT

As we have designed it for Women's Safety it is very use full for women's to send their location to their Parents or Family, whenever they are in danger by pressing Help Button they can easily send their location link or co-ordinates of location. So their family can easily reach to them and can provide help to them. This will reduce the personal accidents of Women's and also they will feel safe. Also Vehicle tracking system makes better fleet management and which in turn brings large profits. Better scheduling or route planning can enable you handle larger jobs loads within a particular time.
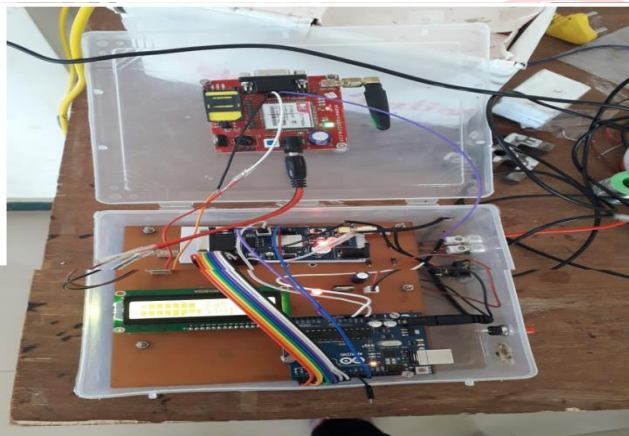


Fig3. Vehicle tracking system using GPS and GSM

## V. CONCLUSION

As we have designed it for Women's Safety it is very use full for women's to send their location to their Parents or Family, whenever they are in danger by pressing Help Button they can easily send their location link or co-ordinates of location. So their family can easily reach to them and can provide help to them. This will reduce the personal accidents of Women's and also they will feel safe. Main motto of the project is to incorporate different types of sensors so that they help in decrease the chances of vehicle theft which we can't stop from occurring.

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