Intelligent Vehicle Monitoring System using Arduino

Prof.S.S.Sawant[1] Prof.V.P.Patil[2] Priyanka Ramgonda Patil[3] Snehal Balu Thombare[4] Sohel Shabbir Momin[5]

[1,2]Assistant Professor [3,4,5]U.G.Scholar

[1,2,3,4,5]Department of Electronics and Telecommunication Engineering

[1,2,3,4,5]P. V. P. Institute of Technology Budhgaon, Maharashtra, India.

Abstract— This paper proposes the design of Vehicle monitoring system. The proposed security system in this project is an integration of existing technology GPS that is currently used in tracking system and communication. SMS is simple way used for communication purpose. This combination of GPS and GSM technologies will provide effective, real time vehicle location, and reporting of the status to the owners.

Key words: Arduino, GPS, GSM, Sensors

I. INTRODUCTION

A lot of mishappenings occur on the road everyday .Therefore the security and monitoring development is needed. To solve such problems, a system is developed using GPS and GSM technologies. This system has Global Positioning System (GPS) which will receive the location value from the satellites. In modern world tracking system is very important. This system is useful in tracking of the theft vehicle and various other applications. The system is arduino based that consists of a global positioning system (GPS) and global system for mobile communication (GSM). GSM modem is used for two way communication. In this system different sensors are used for different application such as ignition lock, fuel theft detecting, speed level control. The system is user friendly and used for various other purpose. This system allows to track the target anytime and anywhere.

II. RELATED WORK

A. *Arduino Uno:*

The arduino Uno is a microcontroller board based on the ATmega328; it has 14 digital input/output pins, 6 analog inputs, a 16 MHZ crystal oscillator and a reset button. The Uno differ from all preceding boards in that it does not use the FTDI USB to serial driver chip. "UNO" means one in Italian and is named to mark the upcoming release of arduino 1.0. The Uno is the latest in a series of USB Arduino boards and reference model for Arduino platform. The Arduino Uno can power via the USB connection or with external power supply. External power can come either from an AC to DC adapter or battery.

Fig. 1: Arduino Ic

The board can operate on an external supply of 6 to 20 volts. If supply with less than 7v, however, the 5v pin may supply less than five volts and the board may be unstable. The ATtmega328 has 32 KB of flash memory for storing code.

B. *GSM:*

GSM built with dual band GSM engine- SIM900A, it works on frequencies 900/1800MHz. The Modem is coming with RS232 interface. The GSM Modem is having internal TCP/IP stack to enable you to connect with internet via GPRS. It is suitable for SMS, Voice as well as DATA transfer application in M2M interface. The GSM having onboard Regulated Power supply that allows you to connect wide range unregulated power supply. By using this GSM modem, we can make audio calls, SMS, Read SMS; attend the incoming calls and internet etc through simple AT commands.

C. *GPS:*

GPS technology gives the information of the positioning of the object such as vehicle, person or device. Now-a-days GPS technology is installed in every mobile phone. GPS works through satellite information. This system controlled by the US department of defense. It was designed for the operation of military army, but currently available to everyone. These devices use global navigation satellite system that is linked via microwave signals to transmit to the GPS devices. Signals are used to gather information about the location, vehicle speed, time and direction. The receivers process these signals to track the exact location, compute velocity and time. This GPS technology is very helpful for finding the exact location of vehicle.

III. SIGNIFICANCE AND SCOPE

The availability of monitored vehicle is very important because many people depend on them to parking the car they are normally used to knowing about vehicle location. These system have more benefits which also give information about the engine temp., fluel level & object front or back side of car .These type of machine are preferred by many traders because of the many benefits they have.

IV. METHODOLOGY

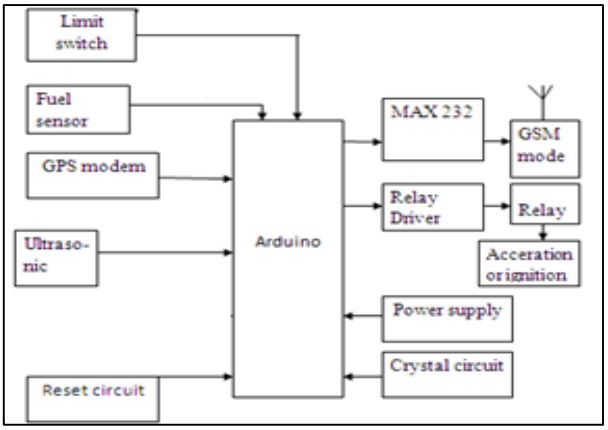

Fig. 2: Block Diagram

– Limit switch:

[5]A limit switch is an electromechanical device that consists of an actuator mechanically linked to a set of contacts. When the limit switch button is pressed then accident detection message will be sent to the owner.

– Fuel sensor:

In this fuel sensor used for detecting fuel level.It informs about the amount of fluid that there is in a vehicle. Car owner needs to be aware of fuel level. Low amount fuel can damage the car in the long run. . It has the advantages of high precision, easy and simple installation. The length of the current output fuel sensor can be adjusted according to the height of the fuel tank.

– Temperature Sensor:

Temperature sensor indicates temperature level. When the temperature increases because of rush driving the speed level will be decreases.

– Ultrasonic Sensor:

Basic principle of ultrasonic sensor is to send the electromagnetic waves and then times how long it takes for the echo of the sound to reflect back.

The speed of sound is approximately 341 meters (1100 feet) per second in air. In this project ultrasonic sensor is used for measuring distance between car and obstacle at the time of parking.

A. Mechanism:

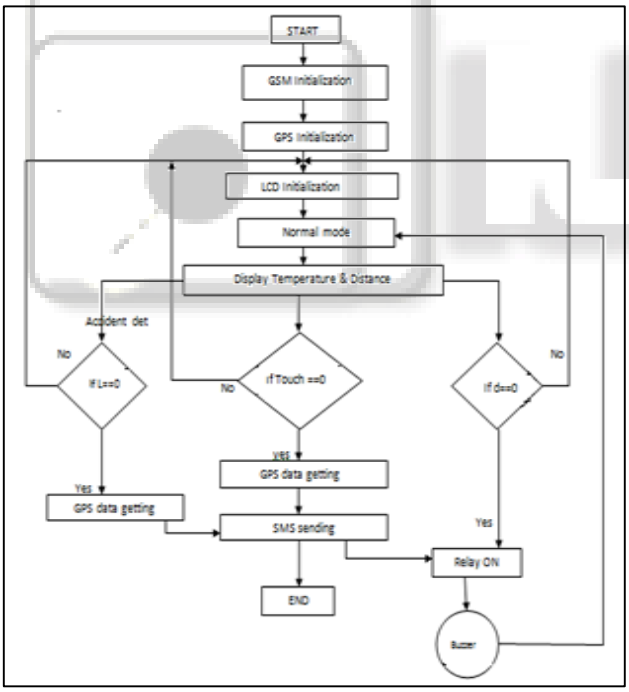

Fig. 3:

B. Software Implementation:

The software part programming through Arduino Uno software (IDE).

C. Hardware Implementation:

– Arduino IC.
– GPS
– GSM
– Ultrasonic Sensor
– Touch Sensor
– Limit Switch

V. RESULT

This system used in real time vehicle monitoring system. It is very useful for vehicle tracking system, security purpose.

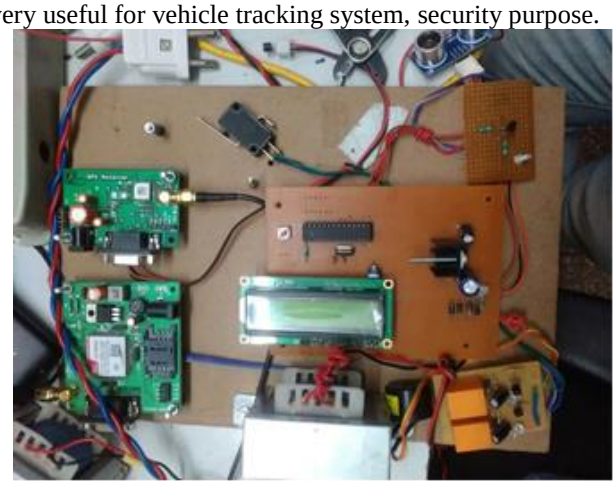

Fig. 4: circuit of vehicle monitoring system

In the parking when we park the car we detect the front or back side obstacle through ultrasonic sensor. Suppose the obstacle is infront of car then ultrasonic sensor detect that obstacle and then immediately buzzer was beep.

When anyone touch the car or try to unlock the car then at ignition circuit LED will glow and also buzzer will beep.

When the limit switch button is pressed then accident detection message will be sent to the owner. The message will be sent as shown in fig4.

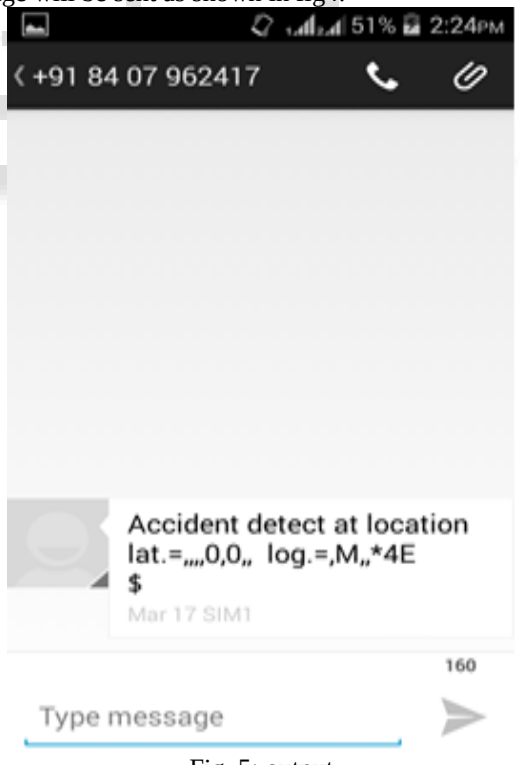

Fig. 5: output

VI. CONCLUSION

In the recent time use of digital is increasing day by day due to their accuracy and feasibility. This system is very high effective, which detect exact location, also avoid theft.

REFERENCE

[1] "Intelligent Vehicle Control Using Wireless Embedded System in Transportation System Based On GSM and GPS Technology" by M. Abinaya, R. Uthira Devi, International Journal of Computer Science and Mobile Computing,
[2] Srinivasan.J, "Intelligent Vehicle Monitoring System using Wireless Communication", International Journal of Innovative Research in Advanced Engineering (IJIRAE) ,Vol.1, 10 (November 2014)
[3] R.Ramani, S.Valarmathy, N.SuthanthiraVanitha, S.Selvaraju, M.Thiruppathi, R.Thangam,"Vehicle Tracking and Locking System Based on GSM and GPS", International Journal of Intelligent Systems and Applications (IJISA), vol.5, no.9, pp.86-93, 2013.
[4] Arduino.co.in
[5] Stephen Herman, Industrial Motor Control Cengage Learning, 2009 chapter 11 "Limit Switches."

