IJIREEICE

ISSN (Online) 2321-2004
ISSN (Print) 2321-5526

International Journal of Innovative Research in
Electrical, Electronics, Instrumentation and Control Engineering

Vol. 9, Issue 5, May 2021

DOI 10.17148/IJIREEICE.2021.9562

GPS and GSM Based Accident Detection System

[1]Prof. Rohini Pochhi, [2]Vaishnavi Ade, [3]Mayuri Peche, [4]Suchita Sur, [5]Bhavana Zade, [6]Kiran Lanjewar

[1]Assistant Professor, [23456]Students,
Department of Electronics and Communication Engineering,
Tulsiramji Gaikwad-Patil College of Engineering and Technology, Nagpur-441108

Abstract: In the present day accidents are the major problem on the earth as the use of the hazards due to vehicles is also increasing human life is more important than anything else. The main cause for accident is high diverting drive drunk and drive over trees and electronic gadgets timely helping it more important than helping and lending hand (so we have designed and suggest the project in such a way that it is save human life during emergency place of accident the axis of the vehicle and GSM module send the alert message on the registered mobile no with the location of the accident today's road accident are increasing suddenly and it is one of major cause for death of human the time between the accident and when the ambulance reaches the location of accident place and important role in saving the human life we decrease the time between when accident across and when the need emergency are sent to the location decrease mortality rates we and human life the main aim of the project is accident location intimation through SMS by using GSM

Keywords- GSM, GPS, Vibration sensor, LCD

I.INTRODUCTION

Nowadays, Road accidents have increased by high demand for automobiles . The development of transportation has been a generative power. It is the seminar proposed to utilize the capacity of a GPS and GSM System to monitor speed. Automobiles have a great importance in our daily life, no accidents caused due to increased traffic on the highway and in most situations the family member. The vehicle has different sensors like, Fire Detection, CNG gas Leakage, Smoke detector or vibration sensor ctc. Out Of these we are going to use smoke detectors and lame detector sensors.

When any sensor is detected in the vehicle, MCU sends location and sensor status VIA SMS to the user. In this project PIC microcontroller is use for interfacing to various hardware peripherals. For doing so aPIC16FxXx microcontroller is interfaced serially to a GSM Modem and GPS Receiver. The GPS modem will continuously give the data i.e. However, many lives would have been saved if the emergency could get crash information in time from the GPS data processed by the microcontroller by using the GSM. In simple language, GSM is used to carry your voice (sound) on cell phone networks that are used for a type of technology. The device feeds into the vehicle and captures GPS location info apart from other vehicle information at the regular intervals to central server other vehicle information can include few amount, engine temperature, altitude, reverse geocoding,. Open close , tire pressure, cut off fuel turn off ignition turn on headlight, turn on tell light , battery status, GSM area code cell code decode no of GPS satellite in view, glass open close, fuel amount, emergency button status , cumulative edling, computed odometer, engine rpm , throttle position, gprs status and a lot more capability of the device actually decide the final capability the whole tracking system most vehicle tracking system in addition to providing and vehicle location data, features a while range of communication ports that can be used.

II.SOME COMMONLY USED COMPONENTS

A. GPS

The Global Positioning System was developed by the United States Department of defense. It uses between 24 and 32 medium earth orbit satellites that transmit preset microwave signals. This enables GPS receivers to determine current location, time and velocity. The GPS satellites are maintained by the United States.

United States Air force GPS is often used by civilians as a navigation system on the ground, any GPS receiver contains a computer that " triangulates" its own position by gating bearing from at least three satellites. The result is provided in the form of a geographic position longitude and latitude to most receivers. With thin accuracy of 10-100 meters. Software applications can then use the coordinates to provide driving or walking instructions, getting a lock on by the GPS receiver on the ground usually text some time, especially where the receiver is in a moving vehicle or in dense urban areas. The initial time needed for a GPS lock is usually dependent on how the GPS receiver starts.

IJIREEICE

ISSN (Online) 2321-2004
ISSN (Print) 2321-5526

International Journal of Innovative Research in
Electrical, Electronics, Instrumentation and Control Engineering

Vol. 9, Issue 5, May 2021

DOI 10.17148/IJIREEICE.2021.9562

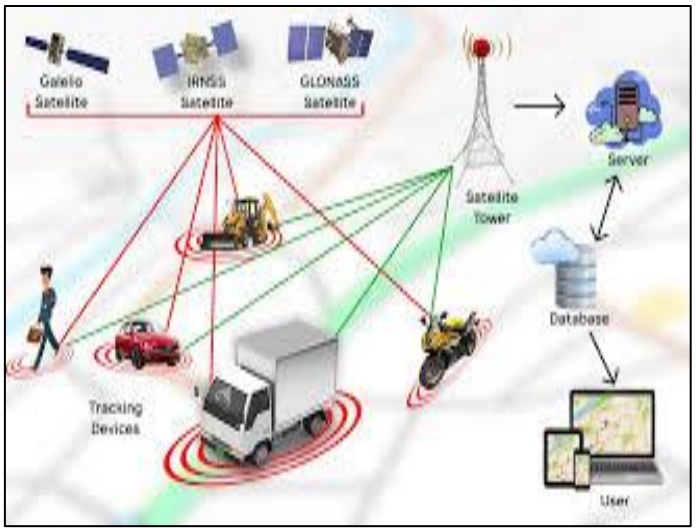

Fig. GPS System

B. GSM

GSM (Global System for Mobile Communications, is a standard set developed by the European Telecommunications Standards Institute (ETSI) to describe protocols for second generation (2G) digital cellular networks used by mobile phones. General packet radio service (GPRS) is a packet oriented mobile data service on the 2G and 3G cellular communication system's global system for
mobile communications (GSM) where protocols means set of invisible computer rules that govern how an internet document gets transmitted to your screen and 2G is short for second-generation wireless telephone technology and provides
advantages like to provide the services such as text messages, picture messages and MMS (multimedia messages).
In simple language, GSM is primarily used to carry your voice on cell phone networks that uses that type of technology

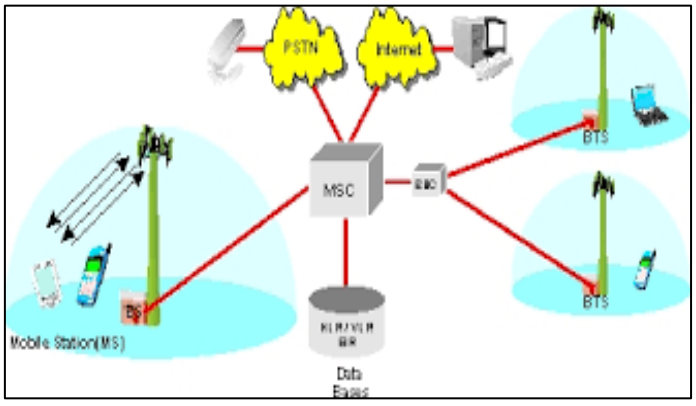

Fig. GSM System

C. Vibration Sensors

The vibration sensor is used for testing the vibrations. It is high vibration detection sensitivity and the environment ability of sound signal suppression. Sensitivity of vibration sensor is 10mv/10mm/sec acceleration.

Fig. Vibration Sensor

IJIREEICE

ISSN (Online) 2321-2004
ISSN (Print) 2321-5526

International Journal of Innovative Research in
Electrical, Electronics, Instrumentation and Control Engineering

Vol. 9, Issue 5, May 2021

DOI 10.17148/IJIREEICE.2021.9562

D. LCD

LCD (Liquid Crystal Display) screen is an electronic display module and finds a wide range of applications. A 16×21 LCD display is a very basic module preferred over seven segment and other multi segment LCDs. The reason being LCDs are economically easily programmable and have no limitations of displaying special and even custom character animation. The data of ASCII value of the data to be displayed on the LCD. This type of LCD is connected to u C using parallel 8 bit or 4 bits line.

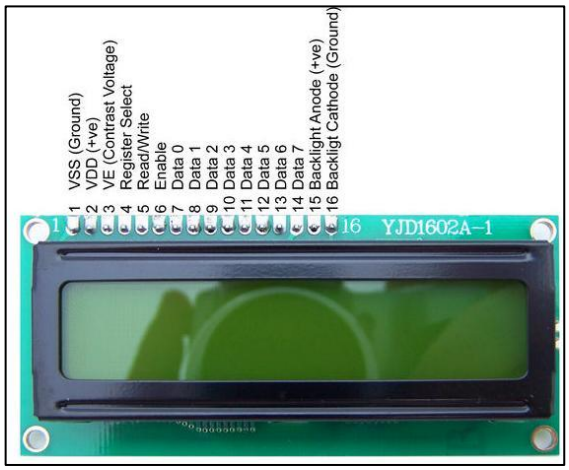

Fig. LCD

III .LETRATURE REVIEW:

[1] Ashish Kushwaha et al. have proposed GPS and GSM Based Accident AlarmSystem**.**
The purpose of this work is to find the vehicle accident location by means or
sending a message using a system which is placed inside the vehicle system. Author has used assembly programming for better accuracy along with GPS and GSM. In this project.whenever a vehicle meets with an accident immediately vibration sensor will detect the signal and send it to the microcontroller. Microcontroller sends the alert message through the GSM to an authorized mobile no. An alternate condition can be allowed by pressing a switch, in order to interrupt the flow of sending the message in case of no casualty. Hu Jian-
[2] Ming, Li Jie, Li Guang-Hui et al. in proposed a stolen vehicle recovery system.
The System ensured increased safety and credibility. It used a C805IF120 microcontroller and vibration sensor. The vehicle owner gets the message regarding the vehicle location at specific intervals through GSM.
[3] C.Prabha ct al. in [3] have presented Automatic Vehicle Accident Detection and Messaging System Using GSM and GPS
In this paper an accelerometer can be used in a car alarm application so that dangerous driving can be detected. This paper is useful in detecting the accident precisely by means of both vibration sensor and Micro electro Mechanical system (MEMS) or accelerometer. In this project GPS is used for tracking the position of the vehicle, GSM, ARM controller is used for saving the mobile number in the EEPROM and sending the message to it when an accident has occurred.
[4] T. Krishna Kishore et al. in [4] emphasised on a system that is cost effective and also inculcates the modern internet facility for networking purposes.
Linux operating system has been used along with General Packet Radio Service(GPRS).Advancements include more exact identification of the vehicle location at all times, data transfer facilitation, and freedom from software monitoring.
[5] Nirav Thakor et al. in [5] have presented Automatic Vehicle Accident Detection System Based on ARM & GPS.
The system detects the vehicle accident with the help of vibration sensor or MEMS sensor. GPS module captured the location of vehicle accident and a message is transmitted with the help of GSM modem which contains the coordinates values.

IV. METHODOLOGY

1) The smoke sensor and other sensor sends data to the microcontroller which based on data received imagine the amount of damage appear to the person and based on its damage lavel it decides whether to inform ambulance or not
2)Technology such as GPS is show the exact location of the accident GSM to intimate about accident to the nearest hospital to save time and increase the probability of saving person

IJIREEICE

ISSN (Online) 2321-2004
ISSN (Print) 2321-5526

International Journal of Innovative Research in
Electrical, Electronics, Instrumentation and Control Engineering

Vol. 9, Issue 5, May 2021

DOI 10.17148/IJIREEICE.2021.9562

3)Onece the hospital receives the message and conform the location of accident there is a traffic signal immediately so that ambulance assets the accident location faster

Experimentation:

Here the block diagram components required for the design of project is shown fig This project is designed using a microcontroller the interfacing components used are GSM and GPS modem smoke sensor ,fire sensor RS232,LCD display Driver speaker, Alarm microcontroller, whenever the accident is occurs the intimation of the accident is sent to nearest hospital and to the family members of the database the hospital is intimated with exact location of the accident and post accident injuries using GPS module respectively

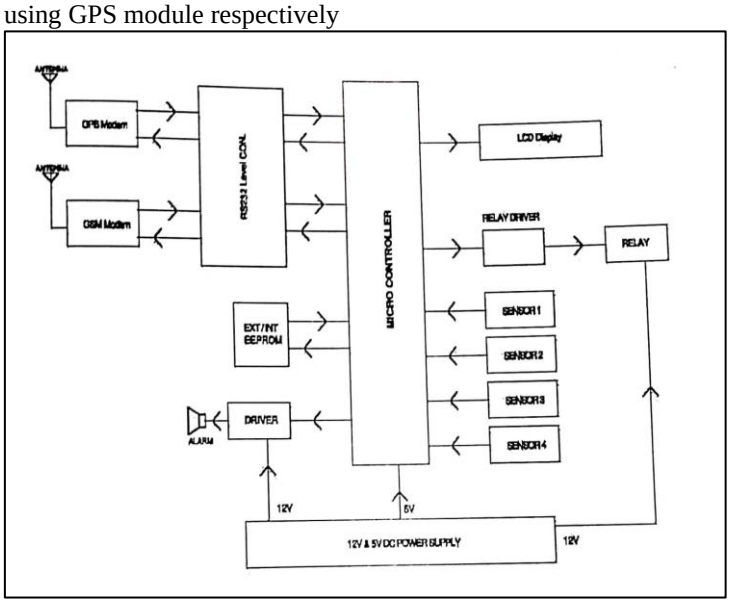

Fig. Block Diagram

V. CONCLUSION

In this paper we have proposed the solution for the people who are dying due to road accidents because accident intimation is not sent to the nearest hospital so that they can send an emergency to the accident location. Crash sensors and Orientation are used to predict the degree of damage to the Vehicle based on which the condition of injury of the passenger in the vehicle can be protected. This data along with GPS coordinates of the vehicle and picture is sent to the nearby hospital or police station based on the principle of great circle confirming once when an ambulance is ready, click on confirm buttons in web or app. The GPS coordinates to the traffic controller so as to clear the lane or as and how the ambulance is within the range of (nearby traffic control) the lane is cleared by showing a go (green) signal.

VI. RESULT

The system proposed above is designed on the basis of sound and multi-layered security principles. It integrates facial recognition technology and thermal inspection and does so at low cost. Everything is cheap. The system is implemented to maintain safety and health with the main concerns, therefore alert emails, text messages will be sent to administrators and whistles will sound. It can be used in schools, universities and offices where safety and health are paramount. The proposed non-contact time and heat control system using Arduino will not only be used for timing and thermal testing, but also for dictionary security checks. This system is used to verify the identity and health of students and faculty. In the future, this could be improved by adding a direct voice call interaction from the manager to the device when a stranger come.

VIII .FUTURE SCOPE

Further this system can implemented by using sound sensor in order to make it more accurate and efficient to detect an accident this is extended with alcoholic detection also if the person who is driving took alcohol then the vehicle will be stopped immediately by giving alarm this can also be developed by interconnecting camera to the controller module that takes the photographs of the accident spot makes tracking easier We found the location of the accident but there may be chance that the traffic jam will be high in that path So we need to come up with some algorithms which gets the nearby hospital with minimal distance and traffic we may add some module which will also let the system know about the traffic details and then find out which node will take less time to reach from the accident spot.

IJIREEICE

ISSN (Online) 2321-2004
ISSN (Print) 2321-5526

International Journal of Innovative Research in
Electrical, Electronics, Instrumentation and Control Engineering

Vol. 9, Issue 5, May 2021

DOI 10.17148/IJIREEICE.2021.9562

VIII. REFERENCES

1. World Health Organization. Global Status Report on Road Safety; World Health Organization: Geneva, Switzerland, 2018.
2. Asirt.org., Road Crash Statistics. Available online: https://www.asirt.org/safe-travel/road-safety-facts/ (accessed on 30 January 2019).
3. Khan, A.; Bibi, F.; Dilshad, M.; Ahmed, S.; Ullah, Z.; Ali, H. Accident Detection and Smart Rescue System using Android Smartphone with Real-Time Location Tracking. Int. J. Adv. Comput. Sci. Appl. 2018, 9, 341–355. [CrossRef]
4. Jackson, L.; Cracknell, R. Road Accident Casualties in Britain and the World; House of Commons Library: London, UK, 2018.
5. IEEE. Pbs.gov.pk., Traffic Accidents (Annual) Pakistan Bureau of Statistics. Available online: http://www.pbs.gov.pk/content/traffic-accidents-annual (accessed on 30 January 2019).
6. Cuena, J.; Hernández, J.; Molina, M. Knowledge oriented design of an application for real time traffic management: The TRYS system. Eur. Conf. Artif. Intell. 1996, 96, 308–312.
7. Inoue, S.; Shozaki, K.; Kakuda, Y. An automobile control method for alleviation of traffic congestions using inter-vehicle ad hoc communication in lattice-like roads. In Proceedings of the IEEE Globecom Workshops, Washington, DC, USA, 26–30 November 2007; pp. 1–6.
8. Maple, C. Security and privacy in the internet of things. J. Cyber Policy 2017, 2, 155–184. [CrossRef]
9. Special Report: The Internet of Things. Available online: http://theinstitute.ieee.org/static/special-report-the-internet-of-things (accessed on 30 January 2019).
10. Huang, Y.; Li, G. A semantic analysis for internet of things. In Proceedings of the International Conference on Intelligent Computation Technology and Automation, Changsha, China, 11–12 May 2010; pp. 336–339.
11. Zhou, Q.; Zhang, J. Research prospect of Internet of Things Geography. In Proceedings of the 19th International Conference on Geoinformatics, Shanghai, China, 24–26 June 2011; pp. 1–5.
12. Jia, X.; Feng, Q.; Fan, T.; Lei, Q. RFID technology and its applications in Internet of Things (IoT). In Proceedings of the 2nd International Conference on Consumer Electronics, Communications and Networks (CECNet), Yichang, China, 21–23 April 2012; pp. 1282–1285.