

# Automatic Accident Notification System using GPS & GSM with 3G Technology for Video Monitoring

A.Sriram and P.Ramya

**Abstract:-** Traffic accidents are one of the leading causes of fatalities in most of the countries. An important indicator of survival rates after an accident is the time between the accident and when emergency medical personnel are dispatched to the scene. As number of vehicle increases mean while the accident also increases. The government has taken number of actions and so many awareness program also contacted even though the accident increases as population increases. In this paper the accident can be notified automatically using sensors and the health condition of the passengers also send as video via GSM to the nearest police station and hospital to bring the ambulance to the spot to rescue the passengers. The Microcontroller is used for pool proof testing.

**Keywords:** GSM, GPS Receiver, Sensors and PIC, Google Earth

## I. Introduction

Road accidents are a human tragedy. They involve high human suffering and monetary costs in terms of untimely death, injuries. Unfortunately, more than half victims are in the economically active age group of 25-65 years. Advanced life saving measures, such as electronic stability control, also show significant promise for reducing injuries.

By observing Figure 1 chart we are able to conclude that there are more number of people dies in each country. Moreover, each minute that an injured crash victim does not receive emergency medical care can make a large difference in their survival rate, e.g., analysis shows that reducing accident response time by one minute correlates to a six present difference in the number of lives saved. This paper shows how the sensors and processing capabilities of GPS and GSM using 3G can be used to overcome the challenges of detecting traffic accidents without direct interaction with a vehicle's on-board sensors.



Figure 1: death due to road accidents

## II. Existing System

The existing system for accident notification system uses GSM and GPS. Early stages smart phone was used later on changed to GPS followed by GSM. But in the existing system using GPS they send only the location with Latitude and longitude signals. But they never used to send the passenger health condition which can be overcome by our system using 3G technology by sending the video of passenger health condition to the hospital so that they can reach out the place so soon.

## III. Proposed System

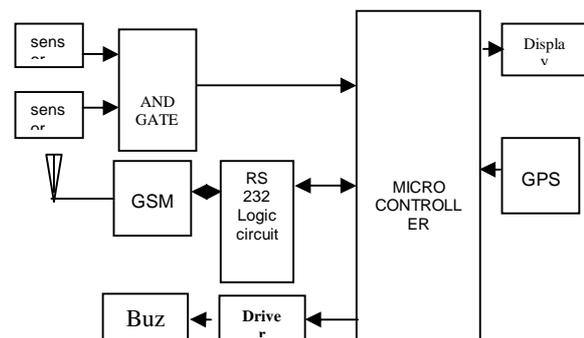
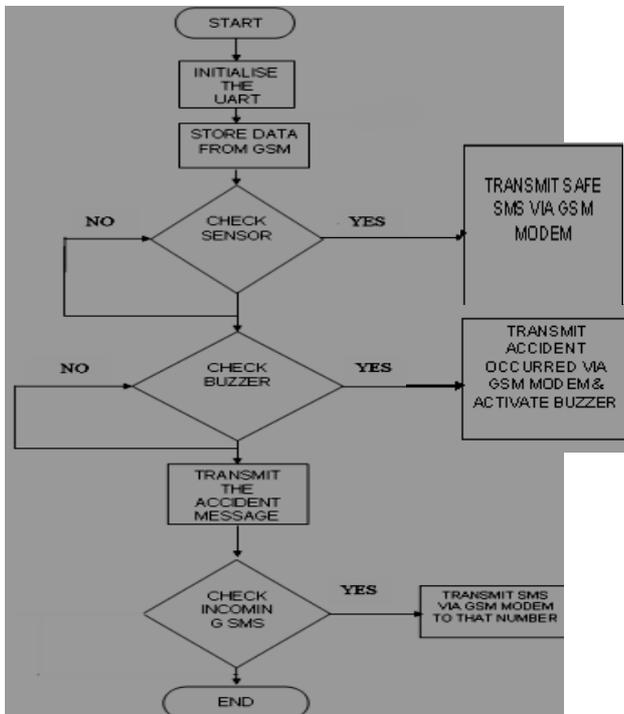


Figure 2: Proposed System Block Diagram

The proposed system consists of in-vehicle GPS receiver, GSM modems (stationary and in-vehicle), microcontroller. The users of this application can monitor the location graphically on Google Earth. The microcontroller here used is it has 40 pins it is 8 bit microcontroller. The GSM terminal is an industrial GSM modem for the transfer of data using 3G technology. In the

A.Sriram and P.Ramya are working as Assistant Professors, Department of ECE, SNS College of Engineering, Coimbatore, India, Emails: [a147ramsri@hotmail.com](mailto:a147ramsri@hotmail.com), [ramyame19789@gmail.com](mailto:ramyame19789@gmail.com)

modern world so many sensors are available but here pressure sensor is used to sense the pressure acting on the vehicle so accident detection here is done by the pressure sensor, which is used as accident sensor. The LCD is used to display the GPS location, time, information about an accident. GPS is used to locate the vehicle location where it goes. The Buzzer is used to make a sound to indicate a message to the person as “information is being transmitted”. Power supply unit supplies power to all functioning units.



When microcontroller, GPS and GSM modem are switched ON, the microcontroller gets the vehicle location, date and time. And monitor the passenger through mobile camera. Now microcontroller starts to sense all the pressure sensors to check whether accident is happened or not. In case if any one of the pressure sensors get damaged then microcontroller assumes as ACCIDENT OCCOURED and sends the vehicle location, date and time to the nearest police station and hospital to take rescue operation and activate the Buzzer in vehicle mean while using 3G technology the mobile camera takes video and send it to the care center to tell about the passenger health condition.

If minor accident occurs then no need to send ACCIDENT OCCOURED information. So when the passenger switch off the Buzzer in vehicle, microcontroller assumes as minor accident and again sends the information as WE ARE SAFE to required care center. But if accident is major one then microcontroller sends ACCIDENT OCCOURED information to required care center. The required care center can confirm the accident by just sending a SMS to that received accident occurred number. When SMS is sent to GSM modem, based on the Buzzer switch position it sends the information to conformed care center number. Now the information is verified by the center.

#### IV. GPS Receiver

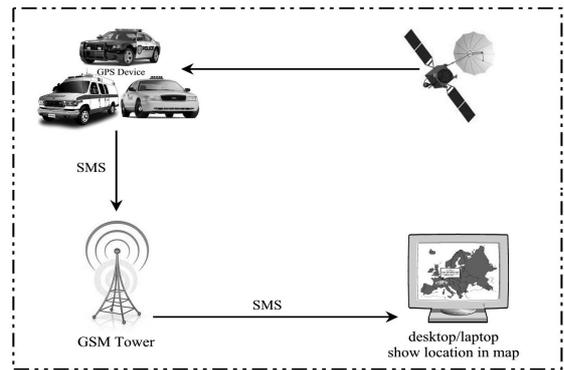


Figure 4: Representation of GPS Receiver

The GPS smart receiver features the 16 channels, Ultra low power GPS architecture. This complete enabled GPS receiver provides high position, velocity and time accuracy performances as well as high sensitivity and tracking capabilities. Thanks to the ultralow power CMOS technology, the GPS receiver is ideal for many portable applications such as PDA, Tablet PC, smart phone etc. The proposed tracking system in this paper monitor the passenger health condition if accident occur. This system is an integration of several modern embedded and communication technologies. To provide location and time information anywhere on earth, Global Positioning System (GPS) is commonly used as a space-based global navigation satellite system. The location information provided by GPS systems can be visualized using Google Earth. In wireless data transporting, Global System of Mobile (GSM) and Short Message Service (SMS) and Multimedia Message Service technology is a common feature with all mobile network service providers. Utilization of SMS and MMS technology has become popular because it is an inexpensive, convenient and accessible way of transferring and receiving data with high reliability.

#### V. Microcontroller-PIC 16F73

The PIC16F73 device contains a non-volatile 64KB Flash program memory that is both parallel programmable and serial In-system and In-application Programmable. In-system programming (ISP) allows the user to download new code while the microcontroller sits in the system. This allows for remote programming over a modem link. For In-Application Programming, the user program erases and reprograms the flash memory by use of standard routines contained in ROM. The device is a single-chip 8-BitMicrocontroller manufactured in advanced CMOS process. The instruction set is 100% compatible than 80C51 instruction set. The device also has four 8-bit I/O ports, three 16-bit timer/event counters, a multi-source, four-priority-level, nested interrupt structure, an enhanced UART and on-chip oscillator and timing circuits. The added features of the PIC16F73 make it a powerful microcontroller for applications that require pulse width modulation, high-speed I/O and up/down counting capabilities such as motor control.

## VI. Applications

- Can be used in Defense area
- Can be used in air craft
- Can be used in anywhere in cities

## VII. Result



Figure 5: The Developed System

## VIII. Conclusion

The traffic accidents keep with a yearly increasing of a high rate. This paper shows that Compared with other applications, this system has advantages in terms of transmitting the passenger health condition as MMS so that the rescue team may know about the condition of the passenger to bring them to hospital in earliest condition which can be vitally important for some real-time applications. Through research presented in this paper, we propose an intelligent car system for accident notification and making the world a much better and safe to live.

## IX. Acknowledgement

This work was supported in part by their institution to bring up the ideas and develop the project. The authors would like to thank their Parents, Relatives- Dr. N. R. Chenthil Kumar, Mr.Pazhani, Dr. Ilango Staffs, Principal and the administration and also like to thank the anonymous reviewers for their constructive comments which greatly improved the quality of this work.

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**A.Sriram** is working in SNS College of engineering, Coimbatore as Assistant professor in the department of ECE. He received the M.E degree in communication Systems from Cape Institute of Technology, Tirunelveli under Anna University Chennai in 2012 and B.E degree in Electronics and communication Engineering from Cape Institute of Technology, Tirunelveli under Anna University, Chennai in 2009. He had published 2 papers in International journals and presented the papers in 3 national conferences in various fields. He has done the project in the area of embedded systems, VLSI. His area of interests are Digital communication, micro-processor, Micro-controller and Digital Electronics.



**P.Ramya**, is working in SNS College of engineering, Coimbatore as Assistant professor in the department of ECE, she received B.E degree from Anna University, Chennai in the year 2010. In 2012, received M.E degree from Anna University, Coimbatore.