

# Mobile Collision and Secured System using PIC Controller

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## Abstract

In this paper the vehicle accident rate has been increasing as compared to previous decade. The accident rate has increased by 59%. This system minimizes the action time after an accident. This paper deals with such system to detect possible collision and prevent it. The paper presents an efficient implementation of security system for the moving vehicles using SMS alert system. The system uses microcontroller which makes it unique comparative to the other systems. The components used in the proposed work are related with detecting the accident, saving the phone numbers, sending the SMS. The major component is the PIC microcontrollers are in which it performs all the operations related to controlling the embedded system circuit. The security for the vehicles is provided in terms of Detection of accident done using vibration sensor in collision. This detection is sent in the form of an SMS alert to mobile using Global System for Mobile Communications (GSM). The embedded system enclosed with the components is fit inside the vehicle for accident detection.

**Keywords:** PIC microcontroller, Sensor, GSM, GPS, Security, Mobility

## I. INTRODUCTION

In vehicle tracking system main aim is to give Security to all vehicles. The accident information through alert system main aim is to rescuing people in accidents. This is improved security systems for vehicles. The latest like GPS are highly useful now a day, this system enables the owner to observe and track his vehicle and find out vehicle movement and its past activities of vehicle. This technology, popularly called “vehicle Tracking Systems” which created many wonders in the security of the vehicle. This hardware is fitted on to the vehicle in such a manner that it is not visible to anyone who is inside or outside of the vehicle. Thus it is used as a covert unit which continuously or by any interrupt to the system, sends the location data to the monitoring unit. When the vehicle is stolen, the location data from tracking system can be used to find the location and can be informed to police for further action. Some Vehicle tracking System can even detect unauthorized movements of the vehicle and then alert the owner. This gives an edge over other pieces of technology for the same purpose. This accident alert system in it detects the accident and the location of the accident occurred and sends GPS coordinates to the specified mobile, etc.

### A. Mobility Tracking Features

It is mainly benefit for the companies which are based on transport system. In this it can show the position of all vehicles in real time, so that they can create the expected data accordingly. These tracking system can store the whole data where the vehicle had gone, where did it stop, how much time it take at every stop and can create whole data analysis.

#### 1) Accident Alert System Features

This system is based on new technology, its main purpose is to detect an accident and alert to the control room, so the victim can find some help. It can detect accidents the intensity of the accident without any visual contact from control room. If this system is inserted in every vehicle then it is easy to understand how many vehicles are involved in a particular accident and how intense is it. So that the help from control room will be according to the control room, the present board designed has both vehicle tracking and accident alert systems, which make it more valuable and useful. This board alerts us from theft and on accident detection also. This device detects fire accidents also by placing fire detector in one of the interrupt pins through sensors also it is possible.

### B. Usage of tracking in India

Tracking in India is mainly used by transport systems, taxi companies, traffic operators. Taxi operators use this to estimate how far the vehicle is from a particular area and send this information to call centers and they can inform general public about the distance of the taxi location and time it takes tom come to them by using GPS and other software resources. Another use is for

traffic police if this system is located in every vehicle they can estimate the traffic by looking on the map and if any accident is detected then they can route the traffic in to another way and by this way they can avoid traffic collision. Many of the resources are available for this but its few which can detect the perfect status of traffic.

## II. PROBLEM DEFINITION

### A. Existing System

Environment needs to be provided with security system. This security system can be with respect to providing an alert system or indication of usage of secured system. Various security systems include home automation where security is provided for controlling the home appliances, security to the valuables; detection of theft. The other type of security system includes security for vehicles. This paper deals with the detection of vehicle accident and sending the SMS to mobile. This system minimizes the action time after an accident.

This paper deals with such system to detect the possible collision and prevent it. The hardware used in this system is related with detecting the accident, saving the phone numbers, sending the SMS. The major component is the Atmel microcontroller which performs all the operations related to controlling the embedded system circuit. GSM module is used to send the SMS alert to the mobile using AT commands which is connected to the microcontroller through MAX 232. Detection of the accident is performed using vibration sensor, 801S shock sensor which is connected through MCP 3208. MCP 3208 is an analog to digital converter block which gives digital output to the microcontroller. The phone numbers of the mobile to which this SMS alert has to be sent is stored in EEPROM, AT24C08.

The operations performed during the process of sending the SMS is done by the keypad. The display of all such operations is displayed timely on LCD display connected to the microcontroller. The compatibility of the system performance is executed using the software. Programming the microcontroller is performed in Embedded C language. The program is compiled and run through KEIL C compiler. The HEX file is generated with respect to the compiled code using ISP Programmer and this file is dumped on to the microcontroller.

#### 1) Disadvantages

The ADC converter is not inbuilt in this system so that the external ADC is required.

### B. Proposed System

The proposed paper deals with the detection of vehicle accident and sending the SMS to mobile with location. Where the vehicle accident rate has been increasing as compared to previous decade .The accident has increased by 59%. This system minimizes the action time after an accident. This paper deals with such system to detect possible collision and prevent it.

Here in this paper vehicle tracking system plays a key role. If accident is occurred the vibrating sensor in the vehicle will vibrate. This vibrating sensor is connected to the PIC16F778A microcontroller. This PIC ic is also connected with the GPS. Both signals from vibrating sensor and GPS is received by PIC ic. Both signals are transmitted to the GSM and relay circuit. GSM will automatically send the SMS to the ambulance about the latitude and longitude positions of the accident vehicle which are detected by GPS.

Vehicle Tracking System is one of the biggest technological advancements to track the activities of the vehicle. The security system uses Global Positioning System GPS, to find the location of the monitored or tracked vehicle and then uses satellite or radio systems to send to send the coordinates and the location data to the monitoring center. At monitoring center in PIC controller are used to plot the Vehicle on a map. In this way the Vehicle owners are able to track their vehicle on a real-time basis. Due to real-time tracking facility, vehicle tracking systems are becoming increasingly popular among owners of expensive vehicles.

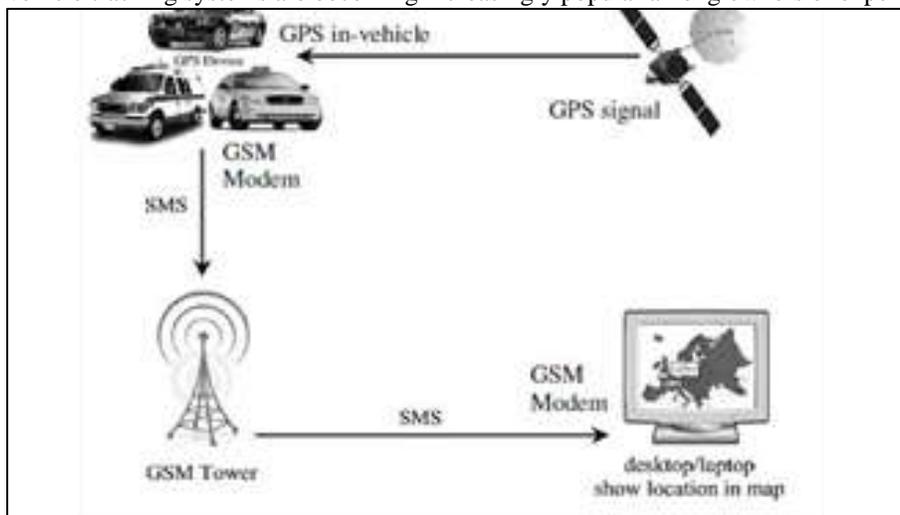


Fig. 1: Overview of the GSM System

The disadvantages of the existing system can be overcome by using PIC ic and GPS. The ADC is built in, in the PIC controller and GPS will also track the location of the vehicle.

### III. SURVEY OF THE RELATED WORK

In this existing system it describes a real time safety prototype that detects the driver condition and adjusts the speed of the vehicle. Sensors are used to detect the driver condition. It uses Psychological signals. When the driver is in abnormal condition first a warning signal is issued to alert the driver and braking will be applied if he continues driving. In this paper introduces an Intelligent Transport System (ITS) is introduced to identify the accident with the location which is immediately sent to the server, so that nearby hospital is found and emergency vehicle is sent to the accident zone. In Automation of a Neighborhood Electric Vehicle (NEV) and the embedded distributed architecture for implementing an Advanced Driving Assistance System (ADAS) with haptic, visual, and audio feedback in order to improve safety with the feature of collision avoidance and motion planning. In this system provided vehicle cabin safety, security based on embedded system by modifying the existing modules.

This method monitors the level of the toxic gases such as CO, LPG and alcohol within the vehicle provided alert information as alarm during the dangerous situations. The SMS sends to the authorized person through the GSM. In this method, the IR Sensor used to detect the static obstacle in front of the vehicle and the vehicle stopped if any obstacle detected. This is avoiding accidents due to collision of vehicles with any static obstacles. In explores location solution, map matching and data compress the associated with the positioning, shows a program flowchart and predicts the trend of the vehicle location system in the future. In the hardware and software of the GPS and GSM network was developed. The proposed GPS/GSM based System has the two parts, first is a mobile unit and another is controlling station. The system processes, interfaces, connections, data transmission and reception of data among the mobile unit and control stations are working successfully. These results are compatible with GPS technologies. In a vehicle tracking system is an electronic device, installed in a vehicle to enable the owner or a third party to track the vehicle's place.

This paper proposed to design a vehicle tracking system that works using GPS and GSM technology. This system built 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. In Face Detection System used to detect the face of the driver, and compare with the predefined face. The car owner is sleeping during the night time and someone theft the car. Then Face Detection System obtains images by one tiny web camera, which is hidden easily in somewhere in the car. Face Detection System compared the obtained images with the stored images. If the images don't match, then the information sends to the owner through MMS. The owners get the images of the thief in mobile phone and trace the place through GPS. The place of the car and its speed displayed to the owner through SMS. The owner can recognize the thief images as well as the place of the car and can easily find out the hijackers image.

### IV. APPLICATIONS

#### A. Mobility

This work arrange since the whole arrangement is pretty compact, it is possible to make it portable. For example, it could be fitted into a car and one could easily charge his mobile phones for the required time without wastage of power.

#### B. Transportation

This automatic wireless charging for existing electric vehicle classes: golf carts, industrial vehicles. By this automatic wireless charging for future hybrid and all electric passenger and commercial vehicles, at home, in parking garages, at fleet depots, and at remote kiosks.

#### C. Industrial

In this progress direct wireless power and communication interconnections across rotating and moving joints eliminating costly and failure prone wiring. Besides that, power transmission could be feasible in harsh environment like construction sites, where long wires with heavy electric supply would only increase the complexity. The direct and wireless power for wireless sensors and actuators eliminating the need for expensive power wiring or battery replacement and disposal in which it can be detect.

### V. CONCLUSION

In our work 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. Vehicle tracking both in case of personal as well as business purpose improves safety and security by using PIC controller, communication medium, and performance monitoring and increases productivity. So in the coming year, it is going to play a major role in our day-to-day living. Main motto of the accident alert system project is to decrease the chances of losing life in such accident which we can't stop from occurring. Whenever the accident is alerted the paramedics are reached to the particular location to increase the chances of life. This device invention is

much more useful for the accidents occurred in deserted places and midnights. This vehicle tracking and accident alert feature plays much more important role in day to day life in future.

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