

# Accident Detection and Avoidance

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## ABSTRACT

Automatic vehicle accident detection is a life-saving application that is vital in today's high speed motorways. In case of motorway accidents, notification to the proper authorities must be done efficiently and expediently. If an accident occurs, the victim's survival rate increases when you give immediate medical assistance. This paper presents an inexpensive but intelligent framework that can identify and report an accident for four-wheelers. This paper targets four-wheelers because the mortality ratio is highest in four-wheeler accidents in India. This framework includes a microcontroller-based low-cost Accident Detection Unit (ADU) that contains a GPS positioning system and a GSM modem to sense and generate accidental events to a centralized server. On detecting an accident, ADU sends accident detection parameters to ADS. This unit also contains alcohol sensor which is use detect whether driver has consumed alcohol or not. This is use to avoid accident cause due to Drink and Drive.

**Keywords :** GPS Receiver, GSM, Sensors, Microcontroller.

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## I. INTRODUCTION

Nowadays accidents occur due to mistakes done by driver. An intelligent system needs to be developed to overcome these mistakes. So this system is proposed where mistakes done by driver are eliminated. Most of the intelligent car systems have monitoring system only. Antilock brakes, speed sensors and other automatic systems are present in sports cars and other luxury cars only. But these cars are not affordable to everyone. So, a system needs to be developed which can be implemented in every car.

When you think of work-related safety hazards, you probably think about what goes on inside the workplace. But one of the greatest threats to your safety is not in the workplace, but rather on the road. Someone is injured every 18 seconds. Over 2 million of those injuries turn out to be disabling. A person dies in a crash on U.S. roads every 11 minutes. In fact, motor vehicle accidents are the most common cause of death in the United States more than cancer or heart attacks. When we think about the serious accident, it could change your life- and not for the better. As of now most of the research and implementation on with mechanical behaviour of the car, its safety and passengers, but what if the driver misbehaviours what can be done? Each year, car enthusiasts salivate at the prospect of seeing what bleeding-edge designs automakers

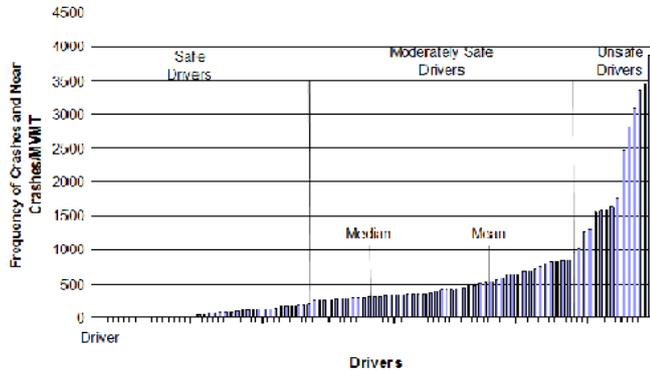
will unveil on the car show circuit. Those same enthusiasts are often disappointed when the amazing concepts still haven't made it to the auto dealer's showroom floor several years later. But before any new car model can ever go on sale to the public, it must first undergo a battery of testing to make sure it'll be safe, reliable and reasonably in tune with the demands of the motoring public. The government demands some of this testing, while other major components of it are devised by the car companies themselves in an effort to ensure they meet specific standards for performance, fuel economy, comfort and other measures, but those which don't are axed.

## II. EXISTING SYSTEM

When you think of work-related safety hazards, you probably think about what goes on inside the workplace. But one of the greatest threats to your safety is not in the workplace, but rather on the road. Someone is injured every 18 seconds. Over 2 million of those injuries turn out to be disabling. A person dies in a crash on U.S. roads every 11 minutes. In fact, motor vehicle accidents are the most common cause of death in the United States more than cancer or heart attacks. When we think about the serious accident, it could change your life-

and not for the better. As of now most of the road accidents- Negligence, Overtaking, Use of alcohols are related to driver.

The main reason for driving drunk is that the police are not able to check each an every car and even if they catch any one the police can be easily bribed. So there is a need for an effective system to check drunken drivers.



### III. PROPOSED SYSTEM

Intelligent systems are in used with every aspect of systems, This System not only deals with component monitoring, does even more than that like Passenger activity monitoring, Behavior analysis, System behavior Notification & coordinate. Eye blink Sensor & Alcohol detection are the vital and of great importance from the perspective of passenger safety and traffic safety. We have developed accident detection unit .when accident happens our microcontroller coordinates the information of accident and send messages to emergency numbers like nearby Hospital, family members of driver and police station this results in getting quick Help to the person suffering from accident. Also using Eye Blink Sensor it detects sleeping mode of a driver and prevent accidents happens in late-night. Then using Alcohol Sensor we can detect whether driver has consumed alcohol so it prevent accident due to Drink and Drive condition.

#### Software Overview

##### Java

Java is the one of the most important programming language which makes most client, secure, portable, robust, platform independent programs. Java provides the two ways for the program development which consist the both stand alone applications as well as applets. Java Provides the portability in the programs means they can run on anywhere, any computers and change in the operating systems does not going to act at all which may differs from there hardware and software specifications amongst the all.

##### JSP

Java Server Pages (JSP) is a technology based on the java language and enables the development of dynamic websites. JSP was developed by Sun Microsystems to allow server side development. JSP \_les are HTML \_les with special Tags containing Java source code that provide the dynamic content. JSP source code runs on the web server in the JSP Servlet Engine.

The JSP Servlet engine dynamically generates the HTML and sends the HTML output to the clients web browser. JSP

is widely used technology because it is easy to learn JSP and it allows developers to quickly produce web sites and applications in an open and standard way.

#### Hardware:

##### 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 ultra low power CMOS technology, the GPS receiver is ideal for many portable applications such as PDA, Tablet PC, smart phone etc.

##### Microcontroller PIC16F877A

PIC16F873A/876A devices are available only in 28-pin packages, while PIC16F874A/877A devices are available in 40-pin and 44-pin packages. All devices in the PIC16F87XA family share common architecture with the following differences

The PIC16F873A and PIC16F874A have one-half of the total on-chip memory of the PIC16F876A and PIC16F877A

The 28-pin devices have three I/O ports, while the 40/44-pin devices have five.

The 28-pin devices have fourteen interrupts, while the 40/44-pin devices have fifteen

The 28-pin devices have five A/D input channels, while the 40/44-pin devices have eight

The Parallel Slave Port is implemented only on the 40/44-pin devices.

#### JAVA SCRIPT

JavaScript was originally developed by the Netscape and later adopted by the Microsoft and gained widespread success as a client-side scripting language for web pages. Now JavaScript has become one of the most popular programming languages of the web. The advent of Ajax returned JavaScript to the spotlight and brought more professional programming attention. The result was a proliferation of comprehensive frameworks and libraries, improved JavaScript programming practices and increased usages of JavaScript outside of web browsers, as seen by the proliferation of server-side JavaScript platforms. JavaScript is an interpreted Computer programming language which was originally implemented as part of web browsers so that client-side scripts could interact with the user, control the browser, communicate asynchronously, and alter the document content that was displayed.

#### Advantages

1. The Vehicle which has gone under accident can be identified using tracking technology.
2. Immediate medication will be provided to accident victims in remote areas.

**Disadvantages**

1. In some places where there is no provision of GSM 2. Network is difficult for communication.

**Benefits to User**

Easy and fast to install.

Low cost with high performance.

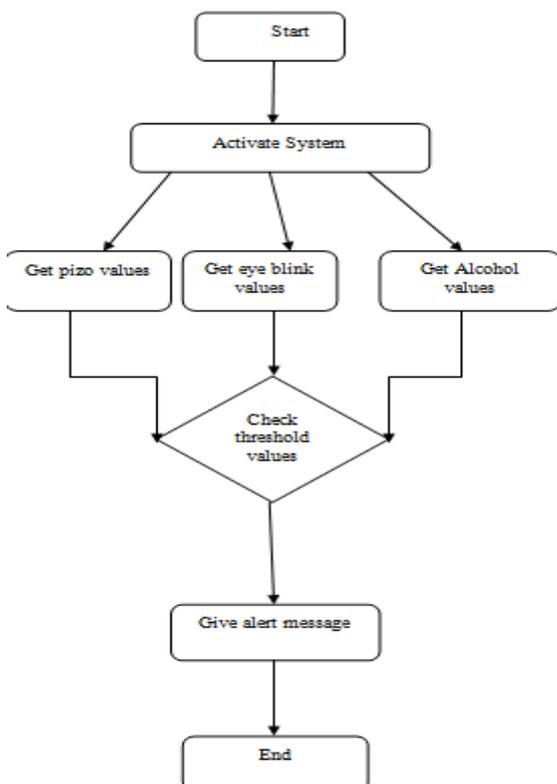
**IV. HARDWARE SETUP**



**ALCOHOL GAS SENSOR MQ-3**

Description: This alcohol sensor is suitable for detecting alcohol concentration on your breath, just like your common breathalyzer. It has a high sensitivity and fast response time. Sensor provides an analog resistive output based on alcohol concentration.

**V. FLOW CHART**



**VI. OUTPUT**



Fig 1. shows the message received which includes the coordinates of the location, date and time of the accident.

**VII. CONCLUSION**

In proposed work contextual state of the two-wheeler is utilized in dynamically identifying the accidental scenarios. The server receives live feed from the vehicle and processes the current feed as per the rules defined for accident detection. The accident is detected on the server side and reported by broadcasting an alert message on the preconfigured numbers. In order to avoid accidents server can intelligently determine the incidents of rash driving and may send the alert messages to the preconfigured numbers. It's a cost efficient method and reliable or two wheeler users. Future work may involving the geographical context of the user and employee that in assessing the accidental scenario. This kit can be useful for R.T.O., Police and Hospitals for various reasons. This life saving method is the need of the hour to provide early assistance to the accident prone patient so as to save the valuable life of the human being.

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