iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** VII **Month of publication:** July 2020

DOI: https://doi.org/10.22214/ijraset.2020.30466

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue VII July 2020- Available at www.ijraset.com

Accident Alert System and Vehicle Tracking

Hritik Tyagi[1], Harshit Gupta[2], Satyam Kasaudhan[3], Richa Gupta[4]
[1, 2, 3, 4]*Electronics and Communication Engineering Department, RKGIT, Ghaziabad, India*

***Abstract:** In today's world of ever developing science and technology, transport system has become a necessity of our daily lives. We being the most advanced generations, use transportation every now and then in our day to day lives. Vehicles play a vital role in our daily lives but with every positive of a thing, comes its negative side too. Road accidents are a major threat to human lives nowadays. Factors like overspeed, drunk driving and careless driving are mainly responsible for road accidents today. This paper puts forward a smart and efficient system for accident detection and alerting with a notification which will track the accident with the help of inbuilt impact sensors. The system will process the data through microcontroller unit and then it will track it using GPS. GSM used in this system will send a notification to the victim's family members [1].*
***Index Terms:** Accident monitoring, Smartphone, GSM, GPS, Impact Sensors, SMS.*

I. INTRODUCTION

In the modern world of science and technology, Transportation system has become a necessity of everyone's life. We are considered to be the most advanced generations and one of the reasons for this is our developed transportation system. Transport play a vital role in our day to day life but as mentioned above, there is always a negative aspect of everything. For transportation system, it is the number of lives people lose everyday due to road accidents. The key factors responsible for road accidents are overspeed, drunk and careless driving. The statistics of road accidents in the recent time have been horrifying. According to the World Road Statistics, India currently ranks 1st in the number of deaths due to road accident every year. In India, nearly 1214 people lose their lives everyday due to road accidents. Approximately 77% deaths are due to manual mistakes. Despite of many efforts made by the government to make people aware of the threats caused by the road accidents to human lives, people are dying due to road accidents at an alarming rate. Most of these deaths are caused due to the fact that immediate help cannot always be provided to the injured person. It is the delay in providing medical help to the injured person which causes death in most of the cases. Hence, there is serious need of such technologies which may help in tracking the victims which will help to lower down the death rate.

II. PREVIOUS WORKS

Many previous works have also been performed for the accident tracking and reporting. One of these methods was, manual accident tracking and reporting in which the passengers passing by the injured person used to report the accident to the emergency authorities so that immediate medical help may be provided to the victim. But this method was having major drawbacks as someone has to witness the accident and it also causes delay in informing and then helping the victim.

L Chan Zhan proposed a method which would include the use of airbag, accident detecting sensors(accelerometer) to reduce the risk of heavy injuries and also a GPS module to track the location of the accident and finally using the GSM module to inform the emergency authorities about the location of accident. Another method of accident tracking which included the use of smartphone of detecting the accident and informing the authorities. This system proposed the use of built in sensors of smartphones like accelerometer and compass which will detect the accident and a notification will b sent to the authorities using smartphone's GSM. But the problem with this model is the accuracy problem of these smartphone sensors which sometime give false alarm to the authorities. Dome of the automotive companies have also developed inbuilt accident tracking and alerting systems to be deployed in their vehicles. Ford motor's drive smart and collision model which provides brake support which in turn gives warning to the passenger through a display over his head which visually resemble the brake lamps. Audi also provided the "pre-sense plus" which included the use of radar system.

All these collision detection systems basically try to avoid or reduce the possibility of collision.

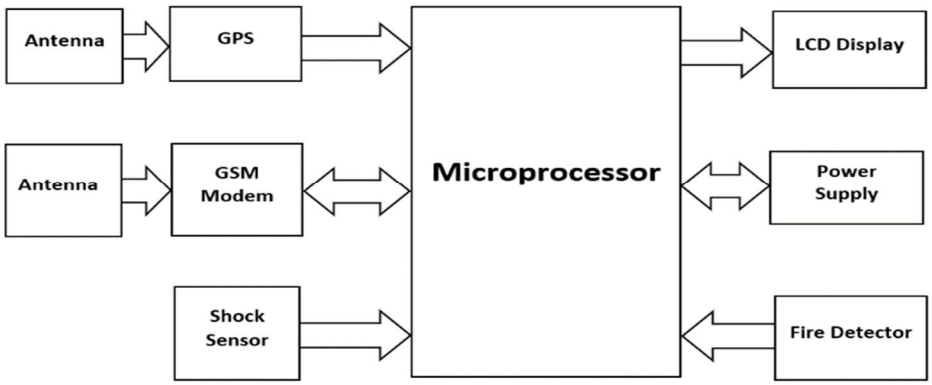
III. NEW METHODOLOGY

We propose a new model which includes the equipping the vehicular body with impact and fire sensors all around which would sense the impact and detect the fire (in case) caused due to the collision. This data from the sensors will be sent to the Microprocessor which will process it and if it finds the values to be higher than the threshold values which already defined, it will setup an alarm for a pre-defined time. If the driver is safe and turns off the alarm during this pre-defined time, then it will not send the SMS to the authorities.

©IJRASET: All Rights are Reserved

But if the driver is seriously injured and does not turn the alarm off, then the microprocessor will send an SMS including location of the accident and other information about the victim like vehicle's registration number and name of the victim to the emergency authorities and the emergency contacts pre-defined by the person using the GSM. It will also include an LCD display in it which will show the co-ordinates of the accident location to the victim so that he can send the co-ordinates manually to anyone who wants if in case the system fails to send the SMS due to some reason.

IV. BLOCK DIAGRAM



V. HOW THE SYSTEM WILL WORK

This is a very efficient system which could help in detection of accidents while using the feature of vehicle tracking. This technology makes use of GPS and GSM technologies. With the help of GPS, location coordinates can be recorded while GSM helps in sending these coordinates to the required facility.

Initially, the driver needs to install the application in his/her smartphone and save contacts which need to be contacted in case of emergency, along with the name, car's registration number and owner's information.

The impact sensors will be installed on either side of the vehicle which will work as shock detector. If these sensors receive the impact more than the threshold value stored in the MCU, the MCU will activate the GPS and it will receive the coordinates of the location. Since the user's the phone is connected to car's Bluetooth, it will send the location to nearby police stations as well to medical centers in case of an accident via GSM technology. The Bluetooth will ring an alarm in phone, which if not silenced within 10 seconds will send distress message. If the cell phone gets damaged, still the person can receive help with use of SATCOM which helps in contacting in remote areas. Therefore, this method proves to be full-proof in any situation.

A. Some New Ideas

1) Since the user will be having a cellphone, the person can contact his near one's to get help.
2) With the help of tracking system, traffic of an area can analyzed as continuous monitoring and segregation of data is done
3) Because of this feature, fuel efficiency can be achieved by selecting the easy routes
4) It is not a costly set-up and hence can be afforded by everyone
5) With the help of MCU and SATCOM, help can be reached even in the remote areas of the country

VI. EQUIPMENT'S AND METHODOLOGY

1) *Microcontroller Unit:* Here the system uses the microcontroller AT89S52. As we know microcontroller unit acts as a heart of the system as it consists of CPU, memory and various I/O pins. We use this type of microcontroller because the experiment requires minimum of 8-bit microcontroller, also the speed provide by this microcontroller is enough to execute our program in real time. The data we get from impact or shock sensor is processed by microcontroller to know whether the accident has taken place or not. We will get the coordinates of the accident by using GPS module.

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue VII July 2020- Available at www.ijraset.com

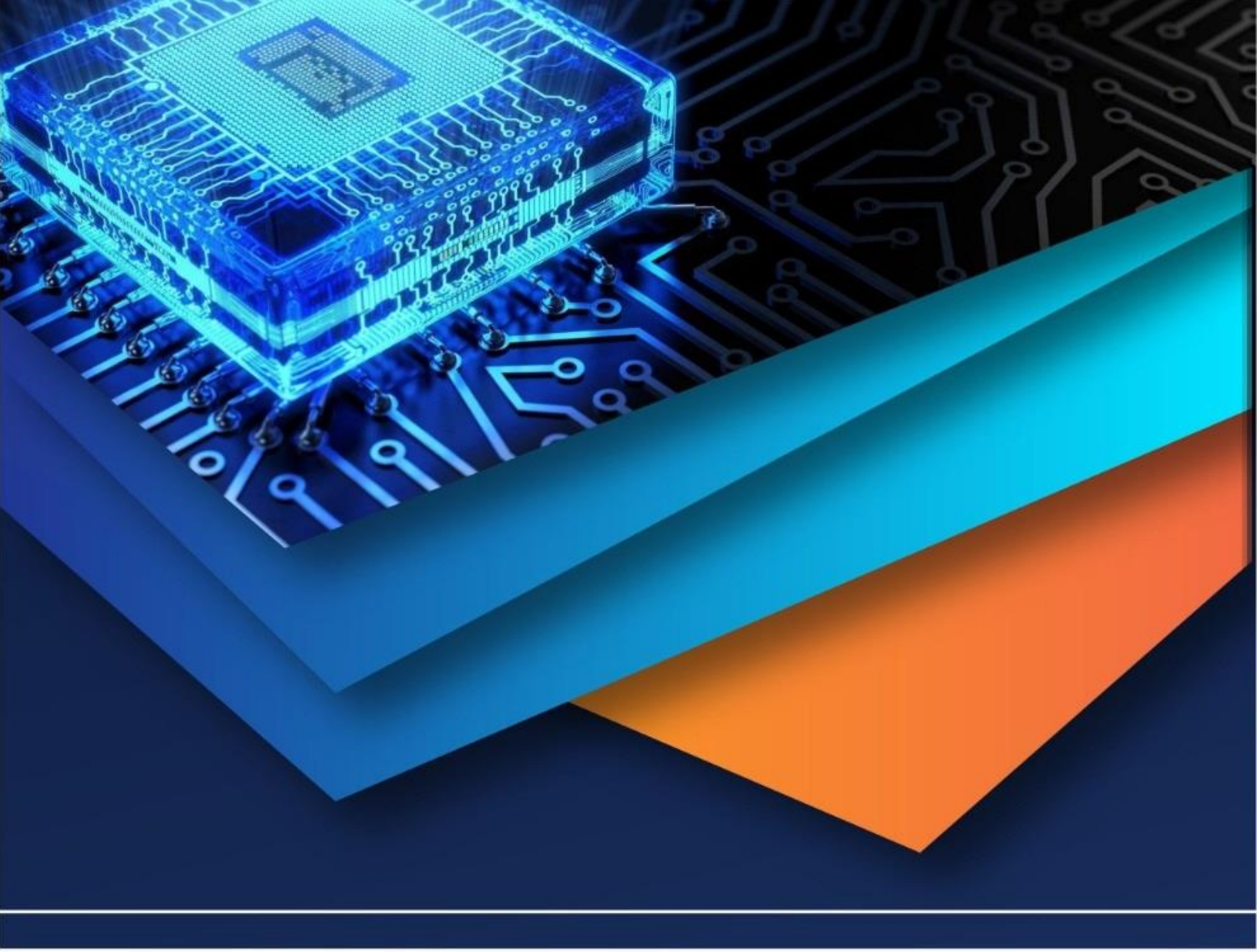
2) *Impact or Shock Sensor:* The shock sensors are used and deployed on the vehicle everywhere to detect any impact with its level that has occurred due to accident. These sensors give information about the accident to microcontroller so that it can process further information. These sensors are placed and fixed in such a way that it processes any information of hard impact on the vehicle. C. GPS module to get the exact coordinates of the location of accident, we use GPS module as it provides the latitude and longitude of the particular position with exact time. It acts as the main component of vehicle tracking and accident detection system. D. GSM module Global system for mobile communication is used to transmit the data from GPS to given mobile. This technology of second generation (2G) of mobile network uses a unique IMEI number which is different for each hardware kit. E. Accident detection algorithm Under this algorithm, the sensors provide the information regarding the impact on vehicle due to accident to microcontroller which initiates the further information procedure. The GPS module will provide the coordinates of the location where accident has happened along with real time. The information is sent to the linked mobile via GSM technology. We can also use the SATCOM module technology if phone gets damaged or dead during the accident.

VII. CONCLUSION AND FUTURE SCOPE:

This device is a low-cost equipment which can be installed easily and is also very efficient. With such technologies, accidents can be prevented and if not, then immediate help can be made available to the victim. This will also help in decrease the death rate of a country due to road accidents. Government can employ such technologies for the betterment of public. Also, with the help of vehicle tracking, users can choose an easy route hence saving fuel as well as time. Involvement of SATCOM also helps in case of remote areas and damaged cellphones.

With so many strengths holding this technology together, there are also few blemishes which can be worked upon in future releases. To improve the working, the application can be connected with Google Maps for more precise data and better analysis, which can be implemented in future to make this technology more versatile.

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)