INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.165

Vehicle Accident Detection and Prevention System

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ABSTRACT: The collection of the real time data after the detection of collision around the vehicle environment and analyze the collected data to have the conclusion regarding the collision and simultaneously transmitting the data over the wireless network. The Evidence Collection System is vehicle based device which is use to collect the data like speed, engine temperature, Brake status, LPG sensor, Alcohol content, acceleration, GPS position, wiper movement, and time etc. This data can be used to investigate the crime, rescue operation and insurance claims. This data then transmitted to the database server so that web application can be able to access this information at different places like police station, Insurance Company. In this paper, I am going to investigate the use of evidence collection system by using different sensors and wireless communication.

KEYWORDS- Ardunio, Alcohol Sensor, Pressure Sensor, Temperature Sensor, GSM, GPS.

I.INTRODUCTION

The vehicle accident is a major public problem in many countries, particularly India. Despite awareness campaign, this problem is still increasing due to rider's poor behaviors such as speed driving, drunk driving, riding without sufficient sleep, etc. The numbers of death and disability are very high because of late assistance to people who got the accident. These cause huge social and economic burdens to people involved. However, good safety device for vehicles is difficult to implement and very expensive. On the roadway driver usually keep a safety distance from one another. On the other hand, due to the driver's interruption, long-time driving tiredness, or a sudden break applied by another car, a serious collision may occur. Even though the driver is in a conscious mind, he cannot respond immediately to control his/her vehicle It can be used to not only reconstruct what happened before an accident by Insurance agents and police but improve vehicle design, roadway design and emergency medical service by automakers, government and hospital. In addition to the basic function, the car black box equipped with Wireless communication system can send accident location information to central emergency and disaster server in real- time. Therefore drivers who want help can receive service quickly by rack car, police and hospital ambulance. Car Black Box detects a crash automatically, and also records the motion of the vehicle and driver's actions during a predefined time period before and after the accident. It consists of data collection devices for collecting the information about car's status and the driver's actions, a nonvolatile memory device for recording, a microprocessor for controlling the unit and a wireless modem for communication.

II.RELATED WORK OR LITERATURE SURVEY

P. Ajay Kumar Reddy 1, P.Dileep Kumar 2, K. Bhaskar reddy3, E.Venkataramana 4, M.Chandra sekhar Reddy 5, "Black Box For Vehicle" A Review on paper International Journal of Engineering Inventions ISSN: 2278-7461, www.ijeijournal.com Volume 1, Issue 7(October2012) PP: 06- 12

A significant number of vehicles currently on the roads contain electronic systems that record in the event of a crash. That is Why it is so important to have recorders that objectively track what goes on in vehicles before, during and after a crash as a Complement to the was used. Subjective input that is taken usually from victims, eye witnesses and police reports.

Miss. Ashwini B. Patil1, Dr. Suresh D. Shirbahadurkar2, Mrs. Vaishali V. Thorat3 "Review Paper on Study and Literature Survey for Evidence Collection System for Car" International Journal of Advanced Research in Computer and Communication Engineering Vol. 5, Issue 4, April 2016

In this paper, The collection of the real time data after the detection of collision around the vehicle environment and analyze the collected data to have the conclusion regarding the collision and simultaneously transmitting the data over the wireless network.

The Evidence Collection System is vehicle based device which is use to collect the data like speed, engine temperature, Brake status, LPG sensor, Alcohol content, acceleration, GPS position, wiper movement, and time etc. This data can be used to investigate the crime, rescue operation and insurance claims. This data then transmitted to the database server so that web application can be able to access this information at different places like police station, Insurance Company. In this paper, to investigate the use of evidence collection system by using different sensors and wireless communication.
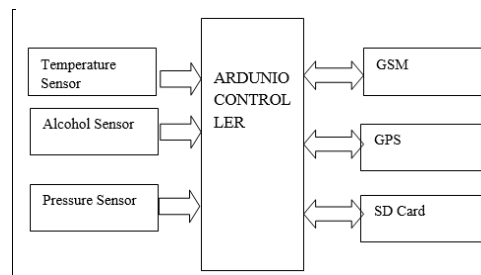
III.SYSTEM ARCHITECTURE

Fig.1Block Diagram of Vehicle Accident Detection and prevention System

Methodology:

In first case the data is coming to the input port of the controller which will continuously get the data. When the collision is detected by collision sensor the incoming data to the input port of the controller will be saved to the memory device connected to the system while transmitter connected to the output port of the controller will simultaneously transmit the data to the wireless network

1.   Driving data: Driving information such as speed, brake and seat belt status, steering performance is taken.
2.   Collision data: Time, speed and shock power when accident occurs is taken from accelerometer.
3.   Positioning data: The car positions checked in real time by GPS. These data are saved temporarily in RAM as memory buffer and transfer to the Flash memory like SD card.
In second case, at receiving end the collected data after the collision will be received by the antenna.

HARDWARE RESOURCES
The hardware part consists of the components and the sensors used in the black box system. This part mainly collects the status of the sensors and stored. ARDUINO Controller received is decrypted and the fed to the server machine so as to store the data to the database. Then the web application developed can be deployed on web server which will use this collected information to generate the reports.the conclusion can be generated logically which can be made available on internet with very less time which can be further use by accident investigation, insurance claim and hospitals for handling emergency situations. Analyze the accident easily and to handle many problems related to car accident like crash litigation, insurance settlements etc.
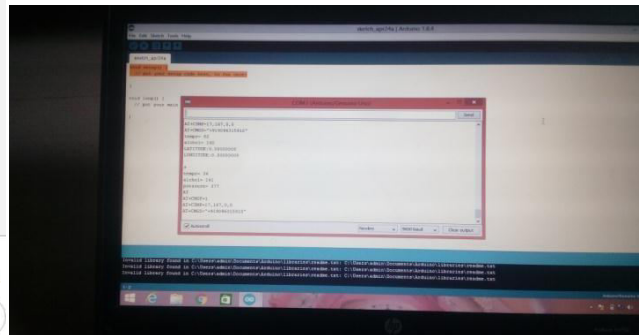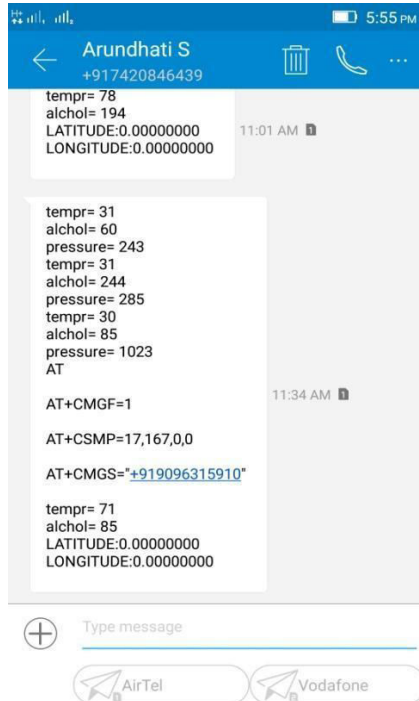
IV. WORKING PRINCIPLE

The working our project is that when any car comes and dashes to our own car the pressure sensor detects the pressure and value increases above the threshold value and the SMS is send through the GSM located inside the circuit. Similarly about alcohol sensor when the driver is drunk the sensor sense the smell and the value increases above the threshold value and again the SMS is send to the owner, insurance company and the police. GPS is used to give the location of the accident place which is helpful for the hospital people to get the accident location as soon as possible.

V. RESULTS

The result of Vehicle Accident Detection and prevention System is the values of sensor i.e. if driver drinks and drive the value of alcohol sensor sense the smell of alcohol and gives the value above the threshold value and as there is change in the value the GSM sends the message to the numbers feed into the program. Same is with the other sensors.

VI. CONCLUSION

Thus main objective of the proposed work of developing a prototype of Black Box For vehicle diagnosis that can be installed into any vehicle. This prototype is designed with minimum number of circuits. This contribute to construct safer vehicles, improving the treatment for crash victims, helping insurance companies with their vehicle crash investigations, and enhancing road status in order to decrease the death rate. The collection of the real time data after the detection of collision in an around the vehicle environment and analyze the collected data to have the conclusion regarding the collision while simultaneously transmitting the data over the wireless network.

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