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IOT Based Accident Alert System Using GSM & GPS

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ABSTRACT: As we know about the safety of automobiles and number of accidents that are taking place in our country. As we see the given data the death toll is very high, so we have tried to make a system that could benefit people that have met an accident and try to minimize the casualties, and provide the safety and emergency services as soon as possible without any delay and automatically

I. INTRODUCTION

Now a day's road accident is a major problem all over the world. The recent report says that annual average of 700,000 road accidents, 10 percentages occur in India which has overtaken China. The latest annual statistics revealed by the World Health organization (WHO) in its first Global status report on road safety, 80,000 people are killed on Indian roads due to speeding, accident driving, less usage of helmets, seat belts and child restraints in vehicles. This latest report of National Crime Records Bureau or NCRB says that 40 people under the age of 25 die in road accidents all around the world. It states that the accident driving is a major factor for the rising of death on roads. The drunk driving fatalities in the year 2009, till the 27th November were 11,769. The numbers for 2007 and 2008 were 12,998 and 11,773 respectively. It shows that the problem of drunk driving is far from over. In the 2009 DUI national statistics released by the NHTSA (National Highway Traffic Safety Administration) 11,773 people died in accident-related crashes. Most of the accidents occur outside the cities are due to accident driving and no testing methodology is adopted to avoid these fatalities in highways.

II. LITERATURE SURVEY

In this project we are using Arduino for coding and GPS for tracking the exact location of the user and a SIM 800 for uploading the data and SMS to the emergency services and family members. A system for locating missing vehicles designed a new algorithm to distinguish between the normal and fallen state of a person which is proposed as the basic theory of the sensing system. The entire solution requires only a mobile phone placed in vehicle and with accelerometer and orientation sensor. A program installed on the mobile phone computes accelerations based on sensor readings, and compares them with typical drunk driving patterns extracted from real driving tests. The high demand of automobiles has also increased the traffic hazards and the road accidents. Life of the people is under high risk. This is because of the lack of best emergency facilities available in our country. An automatic alarm device for vehicle accidents is introduced in here. The proposed design is a system which can detect accidents in significantly less time and sends the basic information to first aid center within a few seconds covering geographical coordinates, the time and angle in which a vehicle accident had occurred. This alert message is sent to the rescue team in a short time, which will help in saving the valuable lives. Switch is also provided in order to terminate the sending of a message in rare case where there is no casualty, this can save the precious time of the medical rescue team. When the accident occurs the alert message is sent automatically to the rescue team and to the police station. The message is sent through the GSM module and the location of the accident is detected with the help of the GPS module. The accident can be detected precisely with the help of accelerometer and ultrasonic sensor. The angle of the roll over of the car can also be known by accelerometer. This

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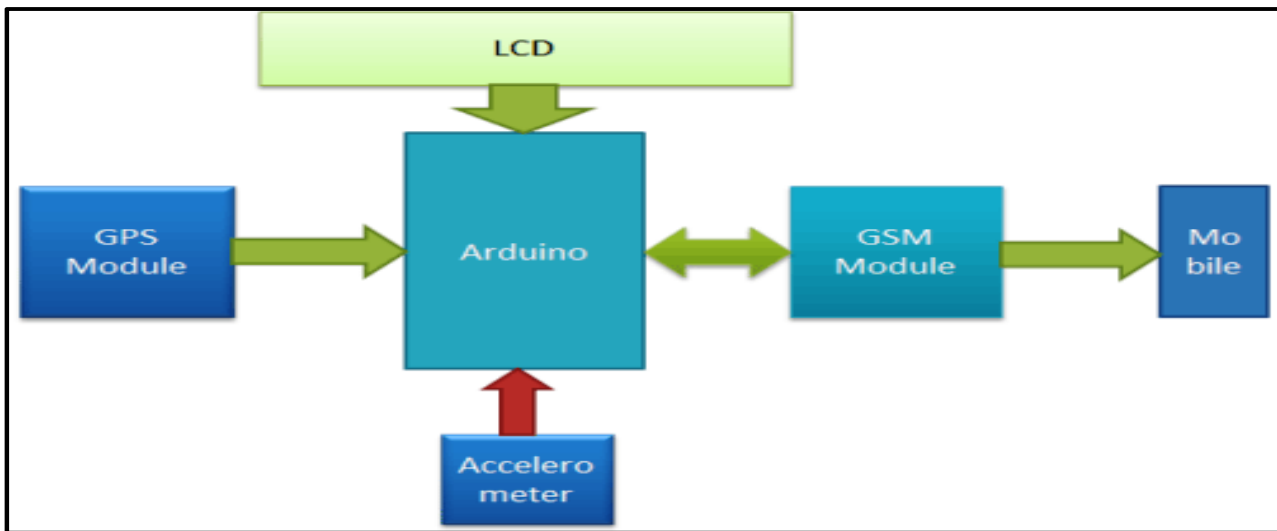


Diagram 1:-Block diagram

application provides the optimum solution to poor emergency facilities provided to the roads accidents in the most feasible way.

The proposed plan of action for our project is to establish a system that can provide fast emergency service and share the live location with the family members & emergency services. So that every necessary help can be provided to the person as soon as possible without any delay & automatically. This model should effectively be able to transmit data using GSM device to another Mobile's, The system block diagram to be used for this project

III. PURPOSE

Our main motive behind designing this system is to locate the place of accident using GPS and sending the alert message to emergency service and family members as soon as the accident occurs

IV. HARDWARE COMPONENTS

A. Arduino UNO

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega8U2 programmed as a USB-to-serial converter. "Uno" means one in Italian and is named to mark the upcoming release of Arduino 1.0.2. Microcontroller

The ADXL335 is available in a small, low profile, 4 mm × 4 mm × 1.45 mm, 16-lead, plastic lead frame chip scale package (LFCSP_LQ).

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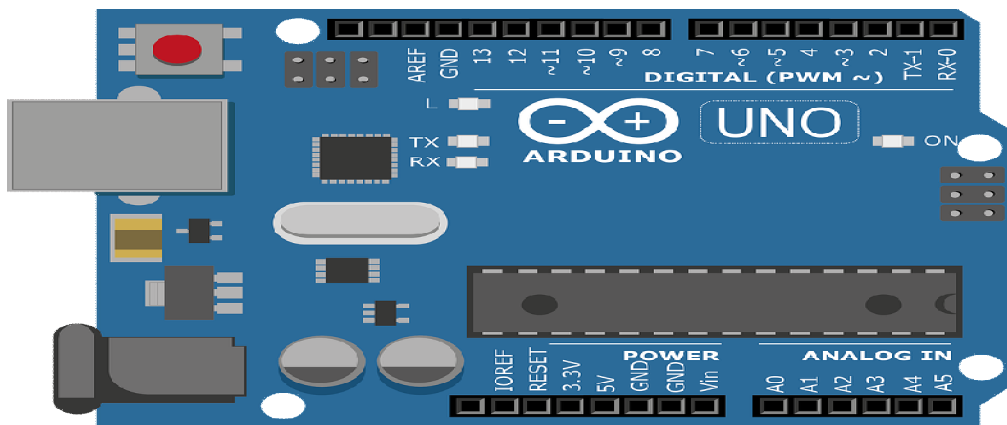


Fig. 1 Arduino uno

The user selects the bandwidth of the accelerometer using the CX, CY, and CZ capacitors at the XOUT, YOUT, and ZOUT pins. Bandwidths can be selected to suit the application, with a range of 0.5 Hz to 1600 Hz for the X and Y axes, and a range of 0.5 Hz to 550 Hz for the Z axis. The ADXL335 is available in a small, low profile, 4 mm × 4 mm × 1.45 mm, 16-lead, plastic lead frame chip scale package (LFCSP_LQ).

B. ADXL335(Accelerometer)

The ADXL335 is a small, thin, low power, complete 3-axis accelerometer with signal conditioned voltage outputs. The

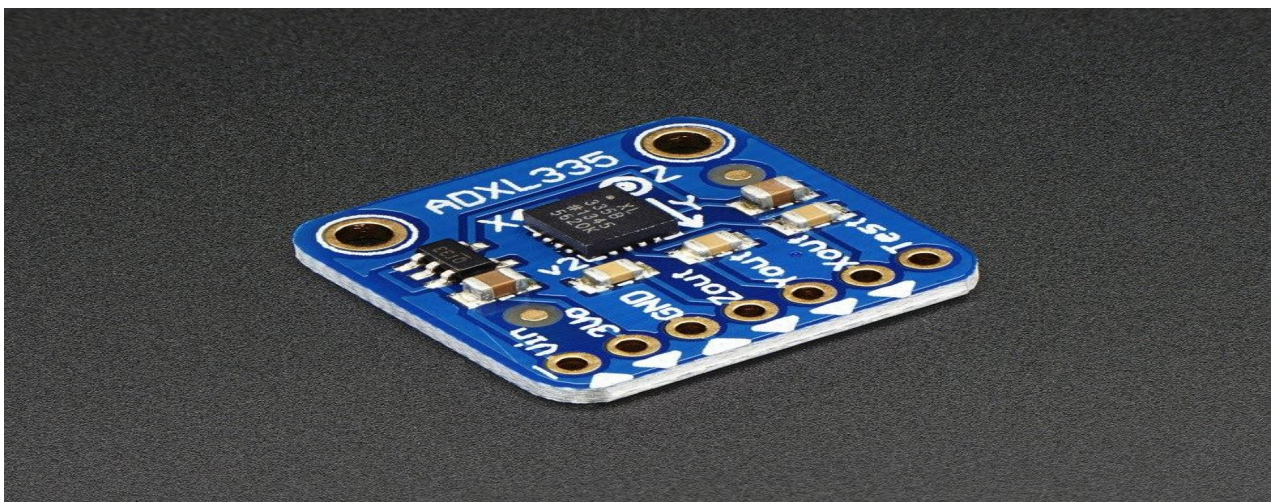


Fig. 2 ADXL335

product measures acceleration with a minimum full-scale range of ± 3 g. It can measure the static acceleration of gravity in tilt- sensing applications, as well as dynamic acceleration resulting from motion, shock, or vibration. The user selects the bandwidth of the accelerometer using the CX, CY, and CZ capacitors at the XOUT, YOUT, and ZOUT pins. Bandwidths can be selected to suit the application, with a range of 0.5 Hz to 1600 Hz for the X and Y axes, and a range of 0.5 Hz to 550 Hz for the Z axis. The ADXL335 is available in a small, low profile, 4 mm × 4 mm × 1.45 mm, 16-lead, plastic lead frame chip scale package (LFCSP_LQ).

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C. 3.GPS Module(SK53):-

The SkyNav SKM53 Series with embedded GPS antenna enables high performance navigation in the most stringent applications and solid fix even in harsh GPS visibility environments. It is based on the high performance features of the MediaTek 3329 single-chip architecture, Its -165dBm tracking sensitivity extends positioning coverage into place like urban canyons and dense



Fig. 3 GPS Module

foliage environment where the GPS was not possible before. The 6-pin UART connector design is the easiest and convenient solution to be embedded in a portable device and receiver like PND, GPS mouse, car holder, personal locator, speed camera detector and vehicle locator.

D. SIM800:-

SIM800 is a quad-band GSM/GPRS module that works on frequencies GSM 850MHz, EGSM 900MHz, DCS 1800MHz and PCS 1900MHz. SIM800 features GPRS multi-slot class 12/ class 10 (optional) and supports the GPRS coding schemes CS-1, CS-2, CS-3 and CS-4. With a tiny configuration of $24 \times 24 \times 3\text{mm}$, SIM800 can meet almost all the space requirements in users' applications, such as M2M, smart phone, PDA and other mobile devices. SIM800 has 68 SMT pads, and provides all hardware



Fig. 4 SIM 800

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V. APPLICATIONS

Automotive and transport vehicles. Security, remote monitoring and transportation and logistics. This system also can be interfaced with vehicle alerting system.

It can be used to provide immediate emergency services to the person without any delay.

Can also be used to track the lost vehicle.

We can also monitor the vehicles from anywhere.

We can also upgrade this system for automobiles data using different sensors as per requirement.

VI. FUTURE SCOPE

1. We can use this device of any automobile and secure the life of our loved once
2. we can add new sensors to improve the device performance and in order to get better data
3. This device can also be compact and be used to locate the vehicle if its stolen
4. It can be used to provide immediate emergency services to the person without any delay.
5. Can also be used to track the lost vehicle.
6. We can also monitor the vehicles from anywhere.
7. We can also upgrade this system for automobiles data using different sensors as per requirement.

VII. CONCLUSION

Our system efficiently checks the sensor status and accident cases. By implementing this system a safe two/four wheeler journey is possible which would decrease the injuries during accidents and also reduce the accident rate due to accident driving Hence the automatic alarm device for vehicle accidents has been implemented using AtMega162 microcontroller.

This design is a system which can detect accidents in significantly less time and sends the basic information to first aid center within a few seconds covering geographical coordinates, the time in which a vehicle accident has occurred. The switch provides the driver a chance to cut off emergency help systems in case the system triggers a false alarm or if the accident is not very severe and immediate help is not required.

The additional Google maps interface also makes the viewing of the location easier. Additional applications of this concept are Stolen Vehicle Recovery, Fleet Management, Asset Tracking, School bus tracking for safety of children and to keep tab on drivers. The system is very much helpful for avoidance of road accidents and ambulance supply. Using this system we can do real time surveillance of vehicles and emergency systems . This Scheme is fully automated, thus it finds the accident spot, controls the traffic lights, helping to reach the hospital in time.

REFERENCES

- [1] Road accidents in India [online] 2007 June 25. Available from: URL: <http://www.easydriveforum.com/f44-share-your-road-experience/road-accidents-in-india-834.html>
- [2] Articles base directory [online] 2011 Feb. 16 Available from: URL: <http://www.dw-world.de/dw/article/0,,5519345,00.html>
- [3] Article from The Hindu [online] 2011 Feb. 10 Available from: URL: <http://www.hindu.com/2011/02/10/stories/2011021063740500.htm>
- [4] Yue -Cheng Wu, Yun-qing Xia &, Zhegiang. —Multichannel reflective PPG earpiece sensor with passive motion cancellationl Biomedical Circuits &System, IEEE, 2007, PP 235-241.
- [5] Drunk Drivers Beware Of Saab De-vice, [http://www.buzzle.com/articles/drunk-drivers-beware-saab-device.html]
- [6] Nissan to drink drive-proof its vehicles, September 2006, [http://www.nissanglobal.com/EN/NEWS/2007/_STORY/070723-01]
- [7] HonglieLeng, Yingzi Lin. —Design & Experimental study of CNT sensor for measuring accident content with short response delayl IEEE Sensor Journal, 2010, PP 1091-1097.
- [8] William R. Reagen, (1979) —Auto theft detection systeml US4177466 (US Patent)
- [9] Shegeyki Kojima, Shinitirou Maeda, Yumi Ogura, —Non-invasive biological sensor system for detection of drunk drivingl Information Technology & applications in biomedicine, 9th international conference, 2009, PP 1-4.
- [10] Jiangpeng Dai, Jin Teng, Xiaole Bai, Zhaohui Shen —Mobile Phone based Drunk Driving Detectionl Pervasive Computing Technologies for Healthcare 2010, 4th International IEEE Conference, March 2010, PP 1-8.

International Journal of Innovative Research in Science, Engineering and Technology

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Visit: www.ijirset.com

Vol. 8, Issue 4, April 2019

- [11] Lei Wang, Benny PL Lo and Guang-Zhong Yang —Multichannel Reflective PPG Earpiece Sensor with Passive Motion Cancellationl IEEE transactions on biomedical circuits and systems, December 2007, PP 235-242.
- [12] I.V.N.S Aditya, Radha Krishna Murthy, Lt. Ravindra BabuKallam, —Alternate Method for the Failure of Antitheft Device used in Motor Vehiclesl International Journal of Computer Applications, Volume 13, No.6, January 2011,PP 023-026.
- [13] Darnell; Ralph D. (Friendswood, TX), Douglas; Claude C. (Houston, TX) (1991), —Cellular Position Locating Systeml US 5,043,736 (US Patent)
- [14] Heng K W J, Lee A H P, Zhu S, Tham K Y, —Helmet use and bicycle-related trauma in patients presenting to an acute hospital in Singaporel, Singapore Med J 2006, PP 367-372
- [15] Alex Tay, Javier Ibanez Guzman, —A Global Path Planning System using Local Navigation Strategiesl, Proceedings of the