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Automatic Identification of Accidents Using GSM/GPRS

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Abstract

The objective of ambient intelligence is to create an intelligent daily space, which is immediately usable and integrated into our homes, our offices, our roads, our cars, and everywhere. This new concept must be invisible; it must blend in with our normal environment and must be present when we need it. One of the applications of this concept consists of providing our cars and roads with capabilities to make the road more secure (information about the traffic, accidents, dangers, possible detours, weather, etc.) and to make our time on the road more enjoyable (Internet access, network games, helping two people follow each other on the road, chat, etc.). These applications are typical examples of what we call an Intelligent Transportation System (ITS) whose goal is to improve security, efficiency and enjoyment in road transport through the use of new technologies for information and communication (NTIC). In this project we are using GSM/GPRS vehicle tracking system and vehicle to vehicle communication system. Vibration sensor detects the accident and using GSM technology it sends the message to another vehicle. If in the case of accident we can detect the location and find the latitude and longitude value. Traditional traffic management systems are based on centralized infrastructures where sensors are implemented along the road, collect information on density and traffic state and transmit this data to a central unit to process it and make appropriate decisions.

Keywords: *GSM/GPRS, Traditional traffic management systems*

INTRODUCTION

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. This design is a system which can detect accidents in significantly less time and sends the basic information to first aid centre 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. A Vibration sensor is also provided in order to terminate the sending of a message automatically 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/GPRS module. The accident can be detected precisely with the help of vibration sensor. This application provides the optimum solution to poor emergency facilities provided to the roads accidents in the most feasible way.

RELATED WORKS

A recent study of my literature survey shows that, R.Sujita et al [1]. Describes the hybrid communication technologies are integrated into modern vehicle and offers the better assistance to peoples who injured in accidents based on estimating the severity of accidents by using Zigbee technology, control data base server, emerging technology. Manuel Fogue et al [2].Describes the new communication technologies are integrated into modern vehicle and offers the better assistance to peoples who injured in accidents based on estimating the severity of accidents by using KDD process. The best programming services to intimate the Dis-seminationin all the direction of vehicles. In very severe situation it messages the maximum number of vehicle by the central server.To propose this it contains the PAWDS and the VANET technology to perform in Inter-vehicular system. Srinivetha. R[5]. To proposed the novel intelligent way to match with the local maps with the mobile phones. It collects the different location of the three axis accelerometer sensor for the position ofthe vehicle and it can view from the smart

phones. RomaGoregoankar [6]. Through the native optimization approaches, it manages the traffic by the VANET technology by the route planning from the source to destination. VBSC produces the path for the owners to contain the alternate route for the destination and also calculates the distance parameters by theV2V communication algorithms. Asinine Burde [4]. For the better accurate location of the accident and the position of the vehicle it representing the GPS and GSM modem. Identifying the accident by the vibration sensor and it terminates theMessage to the control unit. Ashish Kushwaha et al [3]. Using the MEMS technology to help the sensors by identify easily the traffic accidents and to enhance a communication between the control server and the emergency services. The accelerometer sensor uses the large and the small scale range axis for performing the vehicle and GPS module used to find theAccident zone. C.vidhya Lakshmi et al [7]. In recent technology the accidents are sending by the video to the emergency services via GSM module by using the 3g technology to perform the action of the accident. It also generates the message to the main server about the dangerous of the Accident. A. Sri ram et al [2].

PROPOSED SYSTEM

1. GPRS/GSM

GSM (Global System for Mobile communications) is a cellular network, which means that mobile phones connect to it by searching for cells in the immediate vicinity.GSM networks operate in four different frequency ranges. Most GSM networks operate in the 900 MHz or 1800 MHz bands. Some countries in the Americas use the 850 MHz and 1900 MHz bands because the 900 and 1800 MHz frequency bands were already allocated. The rarer 400 and 450 MHz frequency bands are assigned in some countries, where these frequencies were previously used for first-generation systems. General Packet Radio Service (GPRS) is a packet oriented mobile data service on the 2G and 3G cellular communication system. It is now maintained by the 3rd Generation Partnership Project (3GPP).The GPRS provides data rate 56 to 114Kb/sec. The mobile network GPRS however is much faster than the cellular network system this type of system can be used worldwide. GPRS by allowing data to be stored in packets, this data is then transmit in an efficient manner.

2. ARM7TDMI

The ARM7TDMI-S is a general purpose 32-bit microprocessor, which offers high performance and very low power consumption. The ARM architecture is based on Reduced Instruction Set Com*/.send the message to a medical rescue team.

4. L293DIC

L293D IC is a typical motor driver IC which allows the DC motor to drive on any directions. The IC consists of 16 pins. Which are used to control a set of two DC motors instantaneously in any direction? It can control two DC motors. The L293D IC works on principle of H-bridge.one L293D IC consist of two H-bridge circuit inside which can rotate 2 DC motors separately.

5. Liquid Crystal Display (LCD)

Liquid Crystal Display screen [8-9] is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. LCD stands for liquid crystal display. They come in many sizes 8x1 , 8x2 , 10x2 , 16x1 , 16x2 , 16x4 , 20x2 ,20x4 ,24x2 , 30x2 , 32x2 , 40x2 etc. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on. A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on the LCD. The data is the ASCII value of the character to bedisplayed on the LCD.

METHODOLOGY

If any accident occurs vibration sensor will detect the accident and give the information to arm controller. Based on arm controller message will send through GSM/GPRS to medical rescue team, then medical rescue team reaches the accidental zone to help the injured people.

Figure1.1A block diagram representing the circuit developed

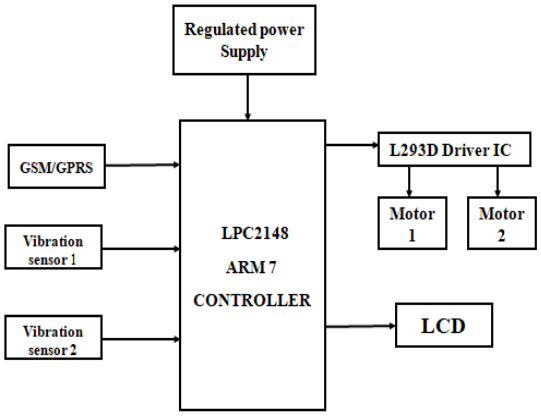

Figure1.1A block diagram representing the circuit developed

The GPRS send the message in an efficient manner. Automatically vibration sensor can identify major or minor accident. In case of minor accident only one vibration sensor detects the accident and sends the message automatically and save the valuable time of medical rescue team. In case of major accident the two vibration sensors detect the accident and send the message to a medical rescue team. By using IR sensor we are controlling vehicle motor speed. L293D IC control two DC motors. To improve overall rescue process, a fast and accurate estimation of the severity of accident system offered perfect emergency services as soon as possible and save the precious life of the people.

EXPERIMENTAL EVALUATION

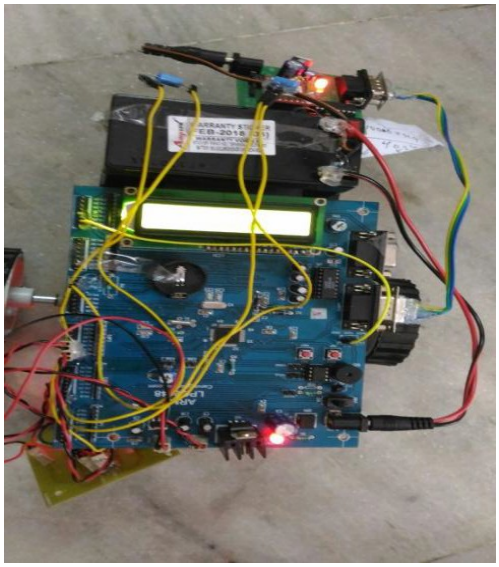

Fig 1.2 Output diagram

In this section experimental result describes the overall accident notification system with the hardware parts. In this we use the LCD display .which is placed in the Vehicle system and it displays the message of the accident location and the speed of the vehicle. Using this we can easily identify the location of the accident spot. The LCD first displays the overall design of the accident detection vehicle system. Now a days, we can't find the accurate location of the road accidents. GSM/GPRS finds the location of the accident and also it send the information to main server. To find the severity of the accident we use the vibration sensor. Vibration sensor used to calculate the speed of the vehicle. In minor accident

there is no need of the emergency services. In case of the moderate and the major accident it will intimate to emergency services. The prototype of the Hardware units and the screenshots of the Accident Detection of Vehicle System are shown below

Fig 1.3 Location of vehicle

CONCLUSION

As a consequence through the use of vibration and GPRS we're going to intimate the respective person about the coincidence and also discover the precise place. So ambulance will reach out in correct time. Accordingly a rescue could be provided instantly.

REFERENCES

I. R. Sujitha, "Automatic Identification of Accident and To Improve Notification Using Emerging Technologies", International Conference on Soft-Computing and Network Security.

II. Manuel Fogue, Piedad Garrido, Francisco J. Martinez, Juan-Carlos Cano, Carlos T. Calafate, Pietro Manzoni, "A System for Automatic Notification and Severity Estimation of Automotive Accidents", IEEE Transactions on Mobile Computing, vol.13, no. 5, pp. 948-963, May 2014, doi:10.1109/TMC.2013.35.

III. A.Sriram and P.Ramya "Automatic Accident Notification System using GPS & GSM with 3G Technology for Video Monitoring" International Journal of Emerging Trends in Electrical and Electronics (IJETEE) Vol. 1, Issue. 2, March-2013.

IV. Ashish Kushwaha, Gaurav Katiyar, Harshita Katiyar, Hemant Yadav, Mr.Shikhar Saxena "GPS And GSM Based Accident Alarm System" National Student Conference On "Advances in Electrical & Information Communication Technology"AEICT-2014

V. Ashwini Burde , S. P. Pingat "Next Generation Vehicular Traffic Management Using VANET Technology" (IJCSIT) International

Journal of Computer Science and Information Technologies, Vol. 4 (5), 2013, 715-720.

VI. Srinivetha. R, Gopi. R "Alert Message Dissemination Protocol for VANET to Improve Road Safety" International Journal of Emerging Technology and Advanced Engineering Volume 4, Issue 1, January 2014.

VII. Roma Goregaonkar, Prof. Snehal Bhosale "Safe Driving and Accidental Monitoring Using GPS System and Three Axis Accelerometer" International Journal of Emerging Technology and Advanced Engineering Volume 3, Issue 11, November 2013.

VIII. C. Vidya Lakshmi, J.R. Balakrishnan "Automatic Accident Detection via Embedded GSM message interface with Sensor Technology" International Journal of Scientific and Research Publications, Volume 2, Issue 4, April 2012 1 ISSN 2250-3153.

IX. Kajal Nandaniya, Viraj Choksi, Ashish Patel, M B Potdar "Automatic Accident Alert and Safety System using Embedded GSM Interface" International Journal of Computer Applications (0975 – 8887) Volume 85 – No 6, January 2014.

X. J. Lin, S. C. Chen, Y. T. Shin, and S. H. Chen, "A Study on Remote Online Diagnostic System for Vehicles by Integrating the Technology of OBD, GPS, and 3G," World Academy of Science, Engineering and Technology, vol. 56, pp. 435–441, Aug. 2009.

XI. C. Xiaorong, S. Zhan, and G. Zhenhua, "Research on remote data acquisition system based on GPRS," in Proc.8th ICEMI, 2007, pp. 2-20–2-23.

XII. A. T. Hapsari, E.Y. Syamsudin, and I. Pramana, "Design of Vehicle Position Tracking System Using Short Message Services And Its Implementation on FPGA", in Proc. Conference on Asia South Pacific Design Automation, Shanghai, China, 2005.

XIII. C. E. Lin and C. C. Li, "A Real Time GPRS Surveillance System using the Embedded System," AIAA J. Aerosp. Comput. Inf. Commun., vol. 1, no.1, pp. 44-59, Jan. 2004.

XIV. S. Sohn and H. Shin, "Pattern recognition for road traffic accident severity in Korea," Ergonomics, vol. 44, no. 1, pp. 107–117, Jan. 2001.

XV. H.-S. Shin, S.-J. Jung, J.-J. Kim, and W.-Y. Chung, "Real time car driver's condition monitoring system," in Proc. IEEE Sensors, Kona, HI, USA, Nov. 2010, pp. 951–954.

XVI. A. Amoroso, G. Marfia, M. Roccetti, and G. Pau, "To live and drive in L.A.: Measurements from a real intervehicular accident alert test," in Proc. IEEE WCNCW, Paris, France, Apr. 2012, pp. 328–332.

XVII. Nat. Hwy. Traffic Safety Admin. (NHTSA).(2012).National omotive Sampling 000System (NASS) and General Estimates System (GES) [Online].Available: http://www.nhtsa.gov/NASS/.

XVIII. Dirección General de Tráfico (DGT). (2010). the Main Statistics of Road Accidents Spain [Online]. Available:ttp34://www.dgt.es/portal/es/seguridad_vial/estadistica

XIX. M. Fogue et al., "Prototyping an automatic notification scheme for traffic accidents in vehicular networks," in Proc. 4th IFIP WD, Niagara Falls, ON, Canada, Oct. 2011.

XX. B&B Electronics. (2012). The OBD-II Home Page [Online]. Available: http://www.obdii.com [20] European New Car Assessment Programme (Euro NCAP). (2012) Test Procedures[Online].Available:http://www.euroncap.com/testprocedures.aspx

XXI. Eurostat: Statistical Office of the European Communities. (2012) Transport Statistics in the EU [Online].Available:http://epp.eurostat.ec.europa.eu/portal/page/portal/transport/ data/main_tables