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Accident Detection and Alerting System with Rescue of Ambulance

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ABSTRACT: The Rapid growth of technology has made our life easier. This advancement in technology also increased the traffic hazards. Hence the ratio of road accidents which take place frequently increases causing immense loss of life due to poor emergency facilities.. Our research provides a solution for accident detection and prevention for human life safety. It enables intelligent detection of an accident at any place and reports about the accident on predefined numbersThe hardware includes vibration sensor, three modules GPS receiver, Microcontroller (Lpc2148), and PIC 16F877A GSM modem (SIM 800).Heartrate sensor when a vehicle faces accident immediately vibration sensor will detect the signal and then Microcontroller sends the alert message through the GSM modem including the location to predefined numbers that can be reserved for a rescue team. anduhile returning through ultrasonic sensor the traffic light will be control.

KEYWORDS: GPS and GSM, Lpc2148 controller,Pic16f877a controller, Egle software, Mplab Software, Heartrate sensor

I. INTRODUCTION

The development of a transportation system has been the generative power for human beings to have the highest civilization above creatures in the earth. Automobile has a great importance in our daily life. We utilize it to go to our work place, keep in touch with our friends and family, and deliver our goods. But it can also bring disaster to us and even can kill us through accidents. Speed is one of the most important and basic risk factors in driving. It not only affects the severity of a crash, but also increases risk of being involved in a crash. Despite many efforts taken by different governmental and non-governmental organizations all around the world by various programs to aware against careless driving, yet accidents are taking place every now and then. However, many lives could have been saved if the emergency service could get the crash information in time. As such, efficient automatic accident detection with an automatic notification to the emergency service with the accident location is a prime need to save the precious human life. This project proposes to utilize the capability of a GPS receiver to monitor and detect the location of accident. When the vehical meets with accident the location will sent through the GSM to the ambulance unit that the accident is detected and then the ambulance is sent towards the accident location. While returning the ambulance in the ambulancetheheartrate sensor is their to measure the heartrate of the victim. andthrugh the ultrasonic sensor the traffic tights will be control. which decreases time to reach the hospital. Through the ir sensor the obstacles will detected by the ambulance if theobstacle is detected the ambulance will stoped.

II. PROJECT OBJECTIVE

Accident detection system developes for saving the human life. to providing the facility of emergency services. like location of accident and traffic light control. This project proposes to utilize the capability of a GPS receiver to monitor and detect the location of accident. When the vehical meets with accident the location will sent through the GSM to the ambulance unit that the accident is detected and then the ambulance is sent towards the accident location.and after taking the victim in the ambulance the heartrae sensor is placed in the ambulance which monitors the heartrate of victim. the traffic light system will be control through the ambulance.this system can work anywhereasthe gsm range is worldwide so the message can be sent from anywhere but in this case the message will sent to the ambulance unit.

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III. SOFTWARE

Mplab is the software used for the programming. and pickit2 sftware is used to burn that program's hex file in the contriller. andEgale software is used to do the schematicof the circuit and the layout.

IV.OPERATION OF SYSTEM

VEHICLE UNIT

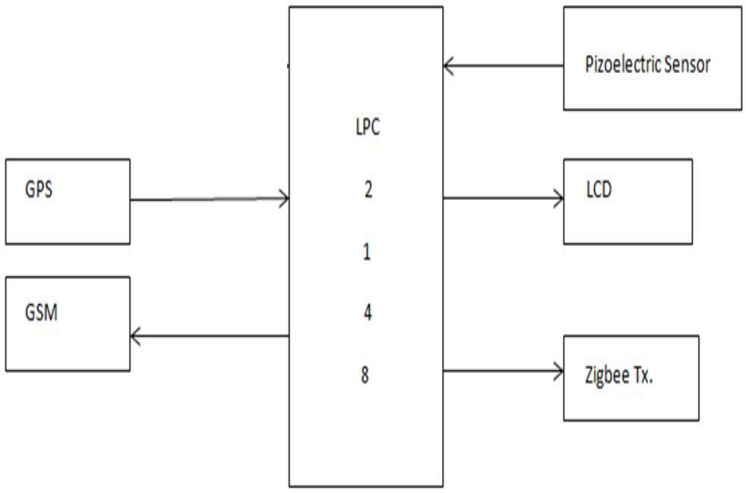

Fig 01 Block diagram of vehicle unit

fig shows the block diagram for the vehicle unit in which thelpc2148 controller is been used. when the pizzoelectric sensor gets activated the signals are sent to the controller that the accident is happen. after that throgh the gsm the message will sent that the accident is happen and the location of accident is sent to the ambulance unit. andsimulenusly through the zigbee the signal sent to the ambulance

AMBULANCE UNIT

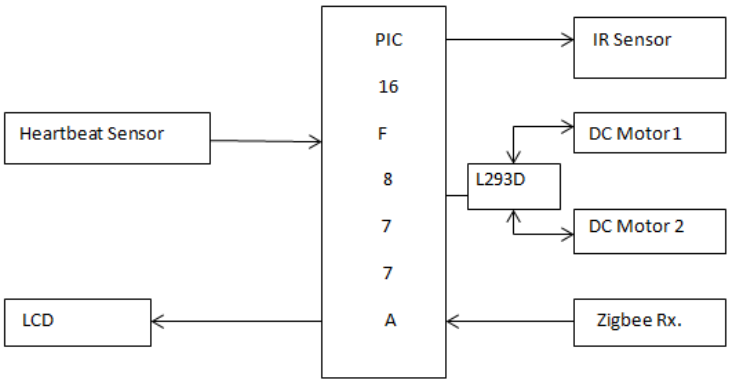

Fig 02 Block diagram of Ambulance unit

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In the anbulanbe when the signal is received through the zigbee the abulannce will start working. and through gps the location will be received via the gsm. pic16f877a controller is been used in ambulance unit.the continues heartrae will check through the heartrate sensor and the ir sensor is used of the obstacle detection. when the obstacle detected the ambulance will stop.

TRAFFIC LIGHT UNIT

pic16f877a controller is used in the traffic light controller. when the ambulance comes in contact with the ultrasonic sensor. the sensor's output is connected to the led which acts like a traffic light. And according to the threshold value the traffic light becomes green.

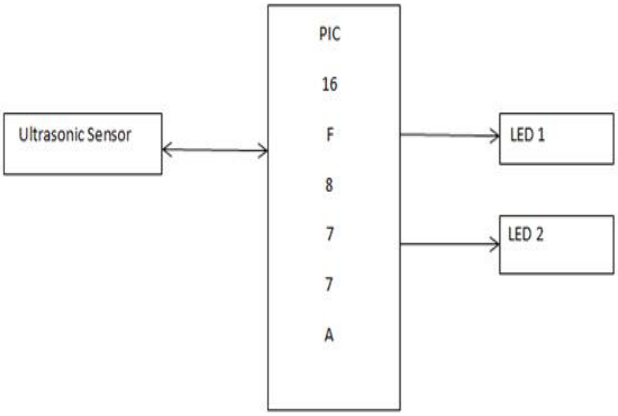

Fig 03 Block diagram of traffic light unit

5.GSM SIM800

The SIM800 is a complete Quad-band GSM/GPRS solution in a SMT module which can be embedded in the customer applications. Featuring an industry-standard interface, the SIM900 delivers GSM/GPRS 850/900/1800/1900MHz performance for voice, SMS, Data, and Fax in a small form factor and with low power consumption. With a tiny configuration of 24mm x 24mm x 3 mm, SIM900 can fit almost all the space requirements in your M2M application, especially for slim and compact demand of design.

6 GPS

It is a complete GPS engine module that features super sensitivity, ultra low power and small form factor.

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The GPS signal is applied to the antenna input of module, and a complete serial data message with position, velocity and time information is presented at the serial interface with NMEA protocol or custom protocol. It is based on the high performance features of the MediaTek MT3337 single-chip architecture, Its –165dBm tracking sensitivity extends positioning coverage into place like urban canyons and dense foliage environment where the GPS was not possible before. The small form factor and low power consumption make the module easy to integrate into portable device like PNDs, mobile phones, cameras and vehicle navigation systems.

V. CONCLUSIONS

This system is a cheaper solution as compared to other similar technologies and hence suitable for the developing countries such as India. Low cost and maintenance free sensors are used to monitor. The system has several advantages in term of its low cost and high accuracy. To provide a good solution for saving the humans life after occuraneof accident. and provide the emmediate emergency serivice towards the accident location. and control the traffic system this system provides the excellent solution.

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