Implementation of Ambulance Rescue System Using LabVIEW (IARS)

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ABSTRACT:

The invention of the wheel was an epoch making event in the ancient civilization. The above mentioned invention paid the way for numerous developments in various sectors. In this fast moving life, vehicles are inevitable likewise the accident. People are asked to drive the vehicles according to traffic rules, nevertheless they meet with accidents. Even the layman knows that the people are losing their life especially due to the late arrival of ambulance to the accident spots. As an engineer we analyzed deeply about this problem and we came to know that the traffic is not only the main reason for the loss of life but also the improper receiving of message and unavailability of ambulance. The main motto of our project is to give solution for people who met with accident especially in rural areas or in highways where there are no people around to help the victims. The above task is achieved by a LabVIEW based plausible act of getting the ambulance arrived at the accidental spot with automated insight.

KEYWORD: *IARS- Implementation of Ambulance Rescue System*

1..INTRODUCTION:

Human life is precious. We are intended to save it at any cause. Accident is one among them. People lose their precious life even in the minor accidents which needs an immediate medication. In addition to that, the delay in informing about the accident and late arrival of ambulance to the accident spot due to traffic congestion are noteworthy. Thus we propose a new design named that would help the victim in their emergency situation. The occurrence of accident is confirmed and the accident spot location is sent automatically to the nearest available ambulances swiftly. Information about the accident is sent via GPS and GSM.

2.SURVEY REPORT:

In our country road accident occurs for every single minute and due to that 16 people loss their life. Over 1,37,000 people were killed in road accident in 2016 alone that is more than number of people killed in all our wars put together.16 children die on Indian roads daily.

2.1.Database (up to date)

No of ambulances in Tamil Nadu   : 481

No of accidents in Tamil Nadu   : 14,504

No of vehicles in Coimbatore   : 2, 17, 785
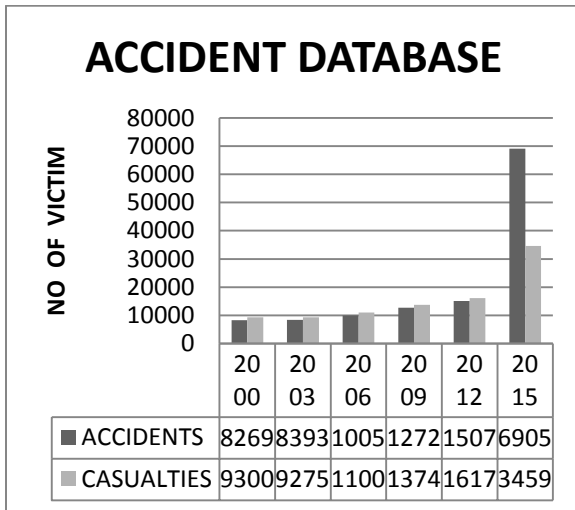
No of peoples killed in road per day : 400

ACCIDENT DATABASE

	2000	2003	2006	2009	2012	2015
ACCIDENTS	8269	8393	1005	1272	1507	6905
CASUALTIES	9300	9275	1100	1374	1617	3459

Chart-1: Accident database

3.LITERATURE REVIEW:

1) In this paper "Traffic accident auto-matic detection and remote alarm device"(2011),it has an important cons regarding detection of minor and major accidents.But we have given an special user interface to halt the further process incase of minor accident.2) In an "intelligent accident detection and ambulance- rescue system"(2014), the accident information is sent only to ambulances.In our IARS message is sent to relatives as well as main server.3) In "An advanced algorithm for finding shortest path in car navigation system" (2008), they preferred uni-directional communication with ambulance.But we implemented bi-directional communication to check availability of ambulances.

4.PROPOSED WORK:

Oursystem consists of three main units.These three units coordinate the function of the system.They are listed below.

- Vehicle unit
- Main server
- Ambulance unit

5.WORKING:

In vehicle unit the accelerometer and vibration sensor will sense the tilt of the vehicle[1]. The sensed value will be then compared with the threshold value. If it is beyond the threshold value then it proceed to next step. Once the accident occurs the buzzer fitted in the vehicle will be turned ON which helps to realize the victim that the IARS is fitted in the vehicle. If it was a minor accident and patient was conscious then they could switch off the buzzer using the suppression key fitted in the vehicle[2][3]. Once the buzzer is switched off the entire process will stop, or else the process will continue and the GPS in the vehicle track the accident spot and sends it to the main server and family members[4]. The main server then sends this location to all nearest ambulances through shortest path algorithm[5][6]. The ambulance which is available will respond to this and make its arrival to the spot.
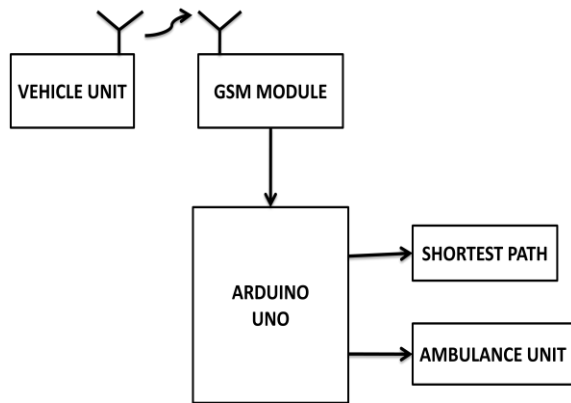
6.BLOCK DIAGRAM:

Fig-1: Block diagram of the entire system

7.VEHICLE UNIT:

The vehicle unit must be fitted in every vehicle which consists of an accelerometer sensor, vibration sensor, a buzzer, a user interface switch (suppression key), GPS and GSM module. The accelerometer sensor used here is ADXL 335 and the vibration sensor IC 555 which senses the tilt experienced by the vehicle and compares the sensed value with a threshold value. The threshold value is assumed to be 3g in our scenario. If the compared value exceeds the threshold value, the buzzer fitted in this unit will be switched ON to alert the victim. The timer inside the unit will simultaneously get triggered.
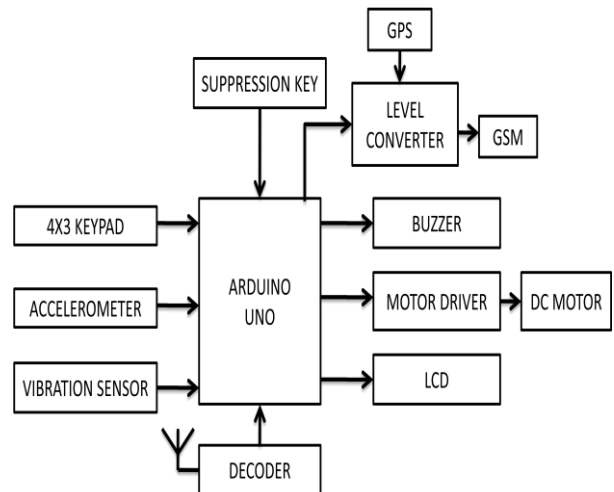

Fig -2: Hardware of Vehicle unit

Fig -3: Block diagram of Vehicle unit

CASE1

In case of minor accident, there may be no need of ambulance so that the victim can terminate the whole system with the user interface switch[2][3].The duration for this termination option is about 2 minutes from the confirmation of accident after this the timer counts to zero.

CASE 2

When the timer counts to zero it proceeds to the next step in which the accident location is tracked by GPS and sent to the main server via GSM.

8.MAIN SERVER:

The main functions of the main server are listed below.

- Receiving accident location from vehicle unit
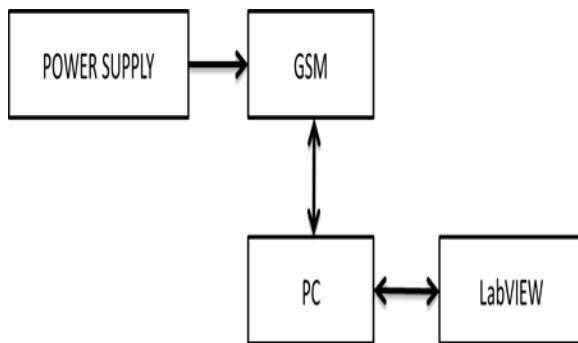- Finding the nearest ambulances

Fig -4: Block diagram of Main Server

9.AMBULANCE UNIT:

The main server on receiving the accident spot location starts to find all the nearest available ambulances around the accident location. In order to achieve this, we have to feed the databases about the ambulances location in prior to the LabVIEW. Then it compares the location and find out the nearest ambulances. After that main server will send the accident spot location to the nearest availability ambulances[4].

SHORTEST PATH ALGORITHM:

Step1: Receiving the location of ambulance 1 by main server

Step2: After 10 seconds it receives the location of ambulance2.

Step3: In an interval of 10seconds it receives the location of ambulance 3.

Step4: Calculating the nearest ambulance using LabVIEW.

Step5: Sending accident location to the nearest calculated ambulance.

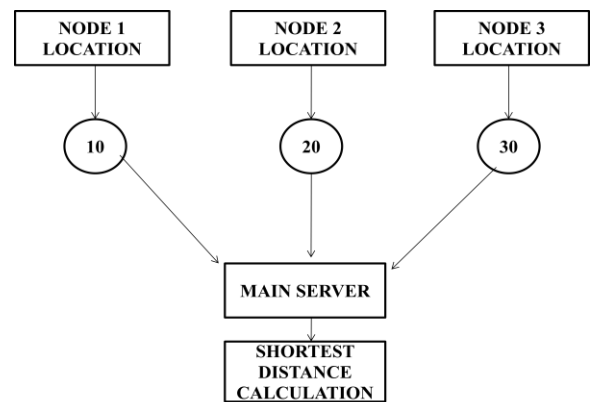Step6: Current ambulance reaches the hospital without any time lag.

Fig -5:Flowchart for finding shortest path
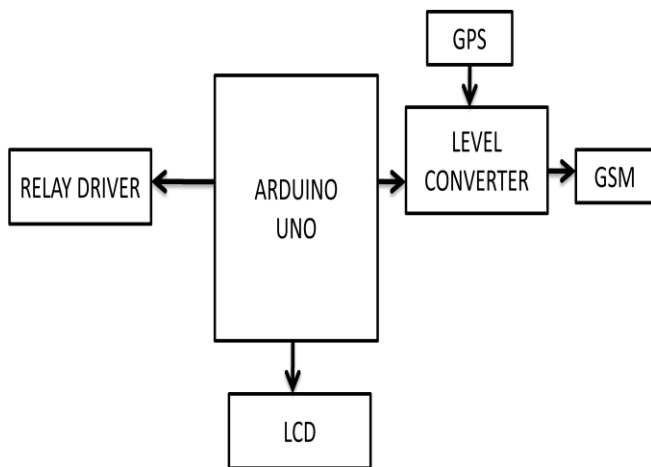
Fig -6: Hardware of ambulance unit.

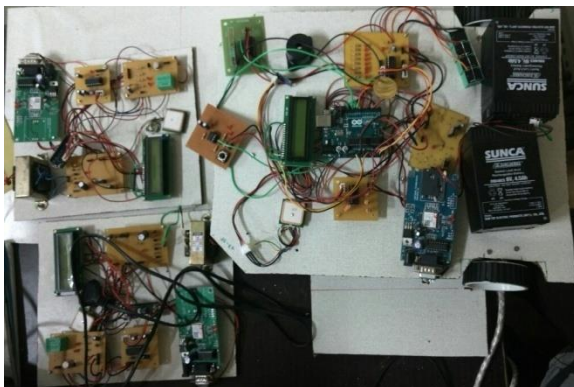**Fig -7: Block diagram of Ambulance unit**

Fig -8: Hardware of entire system

CONCLUSION:

In this paper we proposed a worthwhile sketch which automatically makes the ambulance to reach the accident spot without any time suspension and manual interruption.

10.REFERENCE:

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