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A Novel Technique for Human Safety and Go Green for Priority Vehicles on Road Accidents

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ABSTRACT

As we all know our country is facing serious impacts on road accidents. Road accidents are an outcome of the interplay of various factors, some of which are the length of road network, vehicle population, human population and adherence/enforcement of road safety regulations, heavy traffic etc.The proposed paper gives the best solutions to reduce the problems. Accident identification and alerting, Vehicle accident detection using sensors networks and location information is conveyed to consent people using inbuilt features of smart phones like GPS and GSM meanwhile focusing on traffic zones. The accident location is shared with the nearby hospitals as well as ambulance services. This paper also deals with sending the health details of a person to the nearby hospital to get rid of few tests and utilize the time for other emergency services. The health details of a person is secured and read only format until it is changed by authorized doctor.

Keywords: Arduino Uno, Arduino IDE, Traffic Signal Monitoring, Health Information,

I. INTRODUCTION

Road accident causes injuries, fatalities, disabilities and hospitalization with severe socio economic costs across the country. Consequently, road safety has become an issue of concern both at national and international level.

Presently we have few models which alerts the accidents occurrence: These design focuses on providing basic information on the accident site to the hospital or police station. In this work, a three-axis accelerometer, Piezo electric sensor and Bluetooth communication with smart phones for GPS tracking system are used for accidental monitoring. The major components used in this device are: Arduino Uno (ATMega328P), Bluetooth Module (HC05), Accelerometer sensor (ADXL335) and piezo electric sensor.

These above mentioned papers just include the detection and alerting system, even after alerting the ambulance and getting the patient to the hospital, due to lack of time or in the gasping stage of the person, they need to take the tests required for further treatment due to which the person may die.

We have come up with few improved implementations in these above papers. This can be done by the following

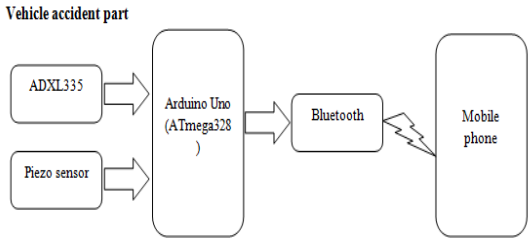
STATEMENT OF PAPER

Aim of Paper

Here our main intension is to send the health details of a person met with accident to nearby hospital using Arduino, at the same time clearing the traffic signal for ambulance i.e. sending the heath details of the person to hospital attendants of hospital to skip

few tests saving precious time of a patient and focusing on further treatments

Block Diagram



Our first unit comprises of Arduino, few sensors namely ADXL 335 and piezoelectric sensor with device like bluetooth.

The output of the sensor activates the Arduino. Based on few conditions the Arduino sends signal to the bluetooth which connects the Arduino and smart phone.

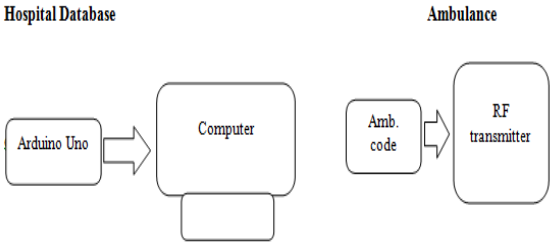
Certain conditions based on which the Arduino sends signal to the Bluetooth is as follows..

- If the voltage produced by the piezoelectric sensor is beyond normal or threshold value indicating severe accident or harm to the person.
- If the accelerometer reads more than threshold i.e. tilt of the vehicle exceeds the normal value indicating rollover of vehicle.

Later the Arduino activates Bluetooth which is further connected to mobile. After being activated the Bluetooth prompts mobile to send a message to the hospital, family and ambulance. The message is sent through the application in a handset. In the presence of internet the message is sent to the nearby hospital or else just to their family members.

The process does not continue if the output values of sensors are within range.

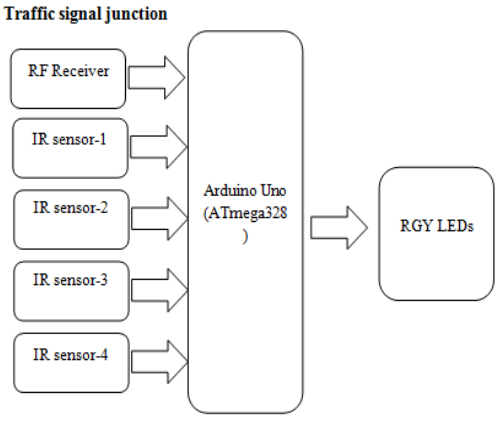
We can use GPS and GSM module instead of handset. We used handset to make our model compact.



a. b.

a. The message sent by the handset is received at hospital which contains link of the health details of the person.The hospital after receiving health details, skip few steps which would result same as mentioned in the health details from the link. The health details of public is saved at particular website which is accessed only by hospitals.

b. RF module is transmitter and receiver model wherein both transmitter and receiver is located on two different bodies. One is located on the ambulance i.e. transmitter and the other is located at the traffic junction i.e. receiver.



The traffic clearance for ambulance and other priority vehicle is done by the traffic signal unit. The arrival of the ambulance in the region is detected by the RF module and the arrival of the ambulance on particular lane is detected by IR sensors. Accordingly the programming is done in the ARDUINO. If the RF module output and the IR output is followed by a acceptable delay then the traffic is cleared by changing the signal.

Experimental Setup and analysis

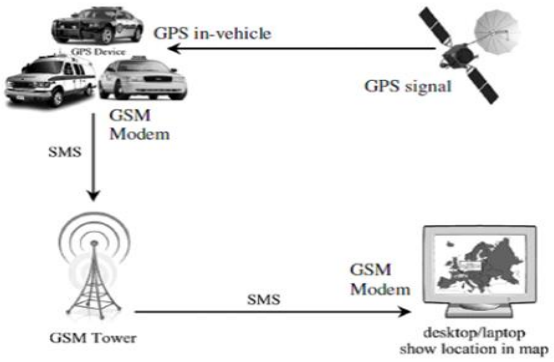
Principle of Operation

Operation 1: The location of the accident spot is sent to the hospital for the ambulance arrival through GPS and GSM.

Operation 2: The heath details of the person are forwarded to the hospital through application in the mobile.

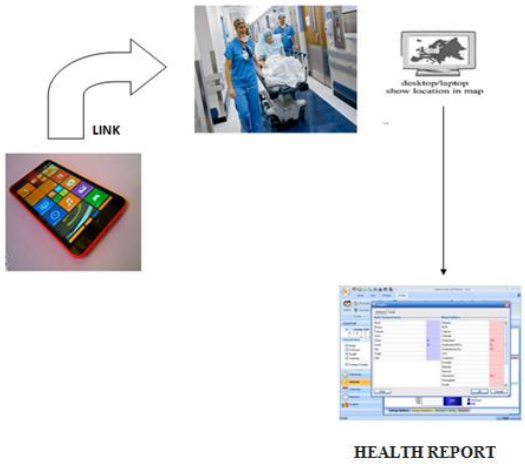
Operation 1

The location of the accident is sent to the hospital through GPS and GSM. Practically we are using GPS and GSM of the smart phone which is inbuilt. The flow is as shown



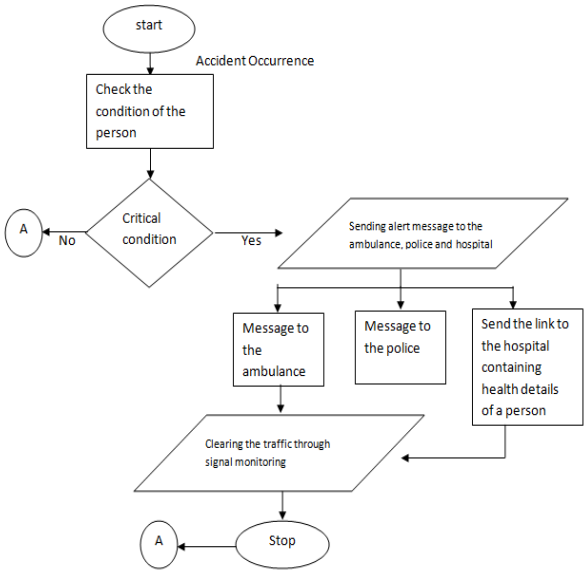
Operation 2

The link of the health detail of particular person is sent to the hospital attendants of hospital through the application developed in the smart phone.



Later the link is opened by the hospital attendants wherein the health details in displayed. The health details of the person is secured and read only format. If any changes it is done by the authorised doctor. The person should update the details every 6 months or frequently as recommended.

Flow Chart



Algorithm

Step1: Start.

Step2: Accident is detected using sensors located on the vehicle.

Step3: Send alert through messages using application to nearby hospital, police, ambulance and family members based on the condition of the person.

Step4: The heath details of the person are forwarded to the hospital attendants of the hospital for further arrangements.

Step5: Meanwhile traffic is cleared for quick reach of vehicle at the spot and back to hospital.

Step 6: End.

Advantages and limitations

Advantages

- Easy to operate and automatic.
- Sophisticated security.
- Simple and Reliable Design.
- To know the pre-existing diseases.
- Useful when patient is unconscious. Limitations
- The person needs to update his health details regularly.

1. The handset need to access internet connectivity to send a message to nearby hospital.
2. The message is not sent or received if the network of either of the device is not good (recipient and sender).

conclusion and future scope

II. CONCLUSION

In this paper, a novel idea is proposed for accident detection and alert system with SMS to the user defined mobile numbers with health details. The health details of the public are uploaded in a website secured by their user id. If this system is implemented in countries with large population like INDIA can produce better results. This system is more accurate with no loss of time.

III. FUTURE SCOPE

This paper is mainly focussing on to reduce the death rate caused due to accident injuries to a person. This can further be improved by focusing on alerting the hospital or any short treatment when the person is feeling uneasy while driving or if any parameters of a person like BP or DIABETES pitches high. Not only driver, it can also be made applicable to other people sitting in the car or vehicle.

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