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Accident reporting and guidance system using GPS

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ABSTRACT

Although the number of accidents that occur on roads is slowly decreasing in time, as both cars and streets become progressively safer, the Statistics of Road Traffic Accidents study reveals that during the last decade every year an average of 150,000 people have lost their lives and 5.5 million have suffered injuries on the roads. Ambulance services in all countries need a special advancement and attention because they are those vehicles that save a lot of lives. On getting the person on the ambulance, his/her fingerprint is scanned through fingerprint sensor and an sms is sent to the family member about the accident occurrence with the help of GPS coordinates of their location and vital signals such as the heartbeat rate and blood pressure of the victim. The goal of the paper is to present the design and implementation of such a system.

Keywords: Track Location, Location Methods, Microcontroller, webpage.

INTRODUCTION

The high demand of automobiles has also increased the traffic hazards and the road accidents. Life of the people is under high risk. An automatic alerting device for vehicle accidents is introduced in this paper.

The design is a system which can detect the details of wounded person in significantly less time and sends the basic information to family members or first aid center within a few seconds covering geographical coordinates in which a vehicle accident had occurred. The alert message is sent to the family members or rescue team in a short time, which will help in saving the valuable lives.

A fingerprint sensor is also provided in order to identify the person who is getting into ambulance and then sending a message. This application provides the optimum solution to poor emergency facilities provided to the roads accidents in the most feasible way.

The overall system structure

The accident reporting and guidance system is trying to implement an automatic crash detection and notification service for portable devices. This uses the GSM cellular network to communicate between the portable device and the Server Centre.

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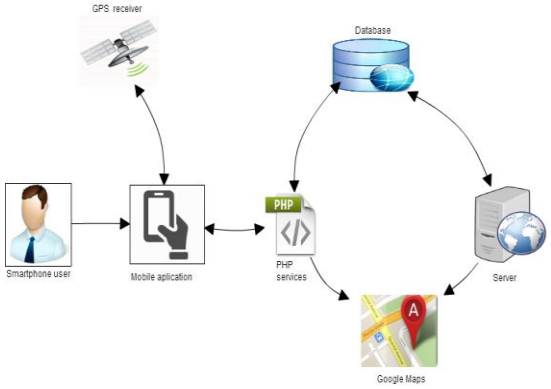
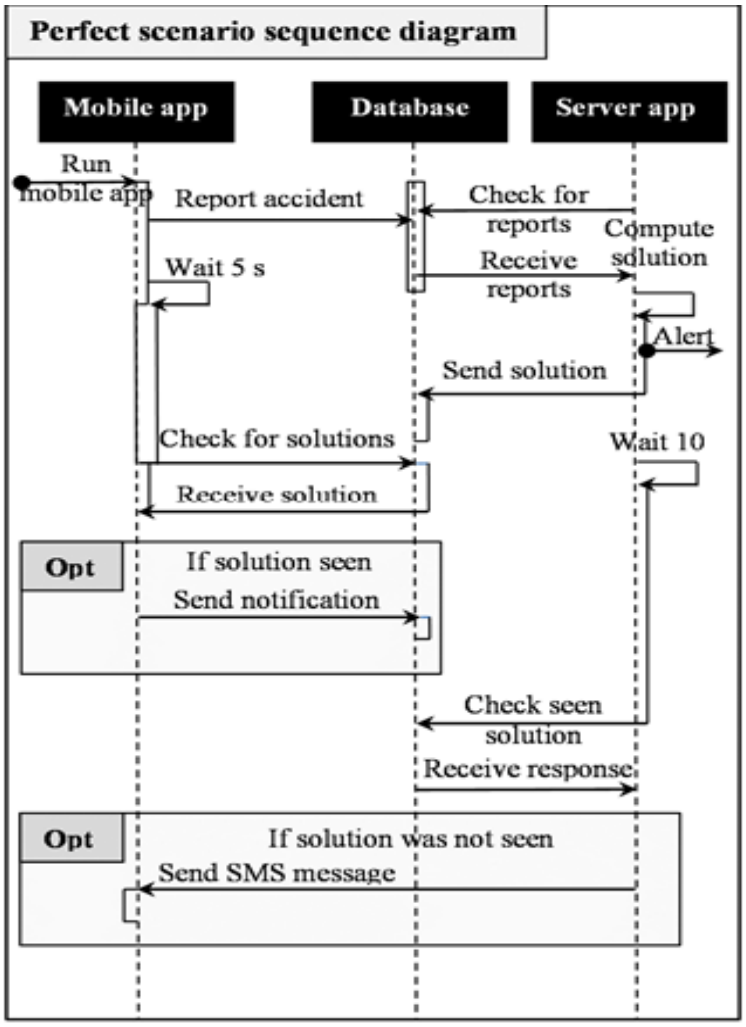


The system is composed of two parts. The first part is a server with secured access, which runs several functions and the second part is the application running on mobile terminals.

The intermediary point in the connection between the client and the server is represented by a database where the data is saved. All these parts are important and if one of them does not work, all the applications system will be compromised. In the application, system diagram is presented [1-4].



System activity perfect scenario

What happens when the mobile application reports an accident? In most of the cases, the mobile application is located in an area where mobile signal exists, and therefore a mobile data connection can be established. In this scenario both the server application and the online database will be considered always available.

Also, for the perfect scenario the user is supposed to have run the application before, registering before the moment of the accident. Only in this case the automatic detection part will be able to interact with the server. This scenario will deal with the report of own accident, while it is basically what the application will be most used for. The report is done when the automatic detector senses the accident, or if it is not active, when the user report itself the accident. But this will work also for the witness accident reporting.

LITERATURE REVIEWS

"A MATLAB-Based Data Acquisition System for Solar Radiation and Environmental Monitoring", Raphael Mukaro.

The hardware design and operation of a battery powered microcontroller based Data Acquisition System (here in referred to as the DAS) for unattended remote measurements are presented. The system was designed around the ST62E20 8-bit microcontroller and applied for solar radiation monitoring. The measurement system uses the Sol Data silicon-cell pyrometer as the solar radiation sensor. The data from the sensor is collected by means of on-chip A/D converter and stored in a serial EEPROM until uploaded to a portable computer. Keeping the DAS in a low power mode, which is only interrupted when measurements are to be taken or when a computer is connected to retrieve the stored data, minimizes power consumption. An on-chip timer provides an interrupt to awaken the system from its low-power wait mode at 10-min intervals to sample and store the data. At the end of each data collection period, the acquired data will be transmitted to the computer through the RS232 serial port for subsequent analysis. Only unprocessed data is stored in EEPROM. Quality control and data analysis is done off-line in the laboratory to minimize system cost, complexity and system downtime.

"Impedence Spectrometer Modelling, In MATLAB/Simulink for Measuring Complex Impedence", El- H. Aglzim, M. Bin Jamaluddin, D. Chrenko, and A. Rouane.

In this paper, we develop a comprehensive real-time interactive framework for the Utility and customers in a smart grid while ensuring grid-stability and Quality-of-Service (QoS). First, we propose a hierarchical architecture for the Utility-customer interaction consisting of sub-components of customer load prediction, renewable generation integration, power-load balancing and Demand Response (DR). Within this hierarchical architecture, we focus on the problem of real-time scheduling in an abstract grid model consisting of one controller and multiple customer units. A scalable solution to the real time scheduling problem is proposed by combining solutions to two sub-problems: centralized sequential decision making at the controller to maximize an accumulated reward for the whole micro grid and distributed auctioning among all customers based on the optimal load profile obtained by solving the first problem to coordinate their interactions. We formulate the centralized sequential decision making at the controller as a hidden mode Markov decision process (HM-MDP). Next, a Viceroy auctioning game is designed to coordinate the actions of the individual smart-homes to actually achieve the optimal solution derived by the controller under realistic gird interaction assumptions. We show that though truthful bidding is a weakly dominant strategy for all smart-homes in the auctioning game, collusive equilibrium do exist and can jeopardize the effectiveness and efficiency of the trading opportunity allocation. Analysis on the structure of the Bayesian Nash equilibrium solution set shows that the Viceroy auctioning game can be made more robust against collusion by customers (anticipating distributed smart-homes) by introducing a positive reserve price. The corresponding auctioning game is then shown to converge to the unique incentive compatible truthful bidding Bayesian Nash equilibrium, without jeopardizing the auctioneer's (micro grid controller's) profit. The paper also

explicitly discusses how this two-step solution approach can be scaled to be suitable for more complicated smart grid architectures beyond the assumed abstract model.

EXISTING SYSTEM

The current method of accident indication is of manual type. Only the patient's details can be seen on identifying the biometrics. After the patient has been to the normal stage, if he can speak, then their family is informed. Because without the patient's knowledge, there is no way to obtain his family details.

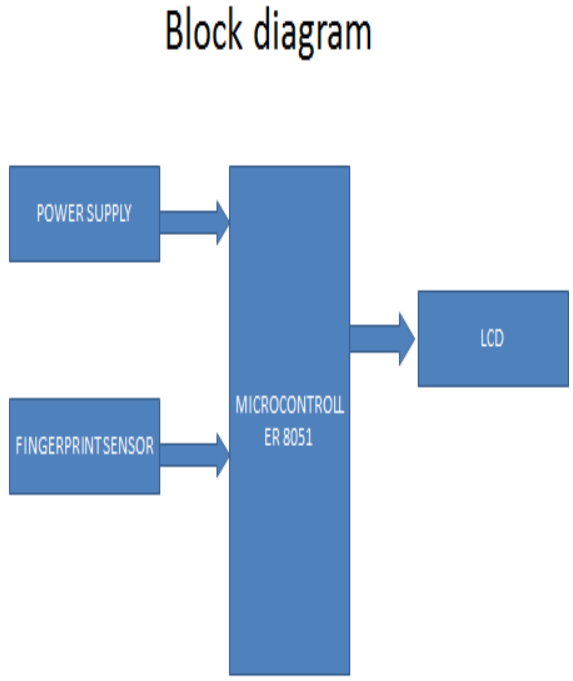


Figure 3.1 Existing Method Block Diagram

DRAWBACKS

There are so many systems already existed for accident reporting, but they are having too many drawbacks include the too much of human intervention that takes large time for reporting the accident. It is suitable for the small range of accidents, but if the spot is too far, it is impossible to track the victim by the existing system. The dosage is different for person to person. If the person have an high pressure, it must to lower his/her pressure and then treatment is given to the victim, but in this system these kind of facilities are not available, so these are all consider as the drawbacks of the existing system.

PROPOSED SYSTEM

This paper deals with the concept of sending an alert to the victim's family regarding the accident. Upon sensing the fingerprint, an automatic alert will be sent to the family. Details such as the location of occurrence, victim's heartbeat are sent. An infrared sensor is used which will detects speed breakers on the road. When this sensor detects a speed breaker the microcontroller will alert it through a Liquid Crystal Display.

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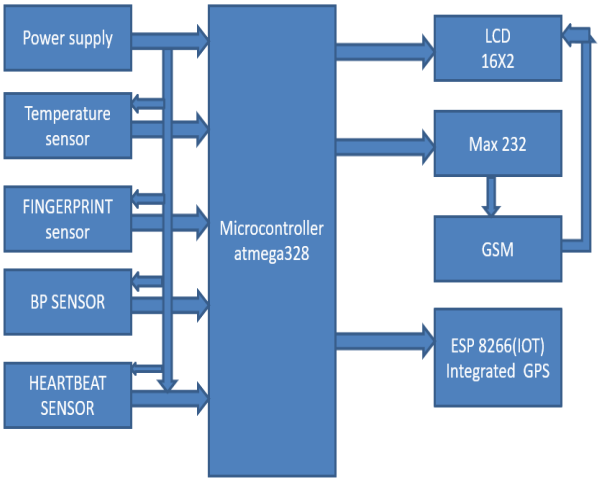

ADVANTAGES

The system we proposed has some advantages that are all having some ideas and technologies to solve the drawbacks on the existing system. In this system we include 'lm35' sensor, by this we can monitor the temperature of the victim. The processing speed is high in this system when comparing to the systems existed. By this system, there is a high chance of saving the lives of the victim because of its speed processing. The dosages are given based on the pressure rates and temperature. These are all the advantages of proposed system.

FUTURE SCOPE

The system works successfully as expected. And additional features can be added to further enhance the efficiency of the system. Such as identifying the blood group of the victim on the spot, extracting his previous medical records from the server.

CONCLUSION

An application accident reporting and guidance was developed. The main purpose of the system is to inform about the accident to the victim's family from the accident location through GSM. This was achieved by using some features that the GPS receiver. The application is under development. In the future, the application will be implemented in IOT devices (for mobile terminals) and the accident detection module will be improved with many features. Also, the accuracy of commercial GPS included in the mobile phones will be increase using common filters.

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