Smart Ambulance Rescue System with Patient Monitoring

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ABSTRACT: Nowadays a traffic congestion on road and tidal flow management are two major problems in which lead to road accident and loss of life. We are dealing with location system of the patient, ambulance driver, and doctor using GPS. To implement this, we introduce Smart E-Hospital Management System for Complete Automation of Patient Health. The main idea behind this scheme is ambulance can reach smoothly to hospital in time, by using edge upgrading and area partitioning algorithm. The ambulance is controlled by control unit which gives the shortest path for reaching hospital and controls traffic lights. The system spot and the nearest ambulance reaches the accident spot. The ambulance is guided to hospital by server through shortest route. The main server finds the ambulance, nearest to the accident spot and also shortest path between ambulance, accident spot and nearest hospital. We implement the Indoor Floyd-Warshall algorithm for finding closest possible distance between the doctors and patient in hospital. At the end we implement Expectation-Maximization (EM) data mining algorithm so that we can get idea of the infectious disease in categorized manner like area group, age group, disease group and also for finding common treatment.

KEYWORDS: Android, Expectation-Maximization(EM), Floyd Warshall Algorithm, Global Positioning System.

I. INTRODUCTION

Due to urbanization and population in India, resulting in the growth in automobile industries. Because of growth in heavy traffic the problems like traffic congestion occur, results in the rule violations, fuel consumption. These are the main reasons on the road accidents. Vehicle accidents are major cause of death in the India. The time minimization between when an accident occurs and as it is responded by people is an effective approach for reducing traffic congestion, such as medical responders, are dispatched to the scene of the accident. Also there is the problem of Police enquiry, due to which the public ignores to help the victims on the road. The existing systems are post accident detection systems. It has lack of intelligence. It fails to track the rear-end collision and pre- damage status. It depends on the way of monitoring people to be manual. It requires manual work to save human life which results in time delay and because of that first aid cannot be provided to the patient on time. This leads to loss of human life. We introduce Smart E-Hospital Management System For Complete Automation Of Patient Health. The main idea behind this scheme is ambulance can reach smoothly to hospital in time.

II. PROJECT IDEA

Traffic congestion and tidal flow management are two major problems in modern urban areas which lead to road accident and loss of life. To implement this, we introduce Smart E-Hospital Management System for Complete Automation Of Patient Health. The main idea behind this scheme is ambulance can reach smoothly to hospital in time. This particular project is designed for the cities with heavy traffic. Eg: In Bangalore the roads are full jammed every time. Most of the time the traffic will at least for 100 metres. In this distance the traffics police can't hear the siren form the ambulance. So he ignores this. Then the ambulance has to wait till the traffic is left. Sometimes to leave the traffic it takes at least 30 minutes. So by this time anything can happen to the patient. So this project avoid these disadvantages. According to this project if any ambulance comes near when the ambulance at emergency comes to any traffic post the traffic signals automatically stop the signals and give green signal for this ambulance

III. PROBLEM STATEMENT

The use of vehicles increases in the proportion of the population. Due to the traffic congestion, the accidents are also increasing now days. Due to the delay in the arrival of ambulance to the accident spot or from the accident spot to the hospital it causes the loss of human life. So, it is necessary to take the accident victim to the hospital as early as possible. Whenever, the accident is occurred, it has to be informed to the investigation unit. So, it is also important if the intimation is reached to the enquiry unit so that the time for the investigation can be minimized. To implement complete hospital management system and analyze the result status. By using Indoor Floyd-Warshall algorithm for finding closest possible distance between the doctors and patient in hospital. By using Expectation-Maximization (EM) data mining algorithm we can get idea of the infectious disease in categorized manner like area group, age group, disease group and also for finding common treatment.

We are dealing with location system of the patient, ambulance driver, and doctor using GPS and providing a complete system using which ambulance driver can get a route which will provide the fastest reaching time to hospital and user. Complete automation of the patient treatment, and if emergency occurs then provide smart alert system to doctors to reach patient using Indoor Floyd-Warshall algorithm. To analyze the patient disease details using Expectation-Maximization (EM) data mining algorithm.

IV. LITERATURE SURVEY

Nowadays Wireless Sensor Networks (WSN) has been applied in various domains like weather monitoring military, home automation, health care monitoring, security and safety etc. or in a nutshell one can say wireless sensor network can be applied in most of the domains. Traffic Signal System or traffic monitoring is a vast domain where WSN can be applied to gather information about the incoming flow of traffic, traffic load on a particular road, traffic load at particular period of time (peak hours) and in vehicle prioritization. WSN installed along a road can be utilized to control the traffic load on roads and at traffic intersections.

The sensor nodes that are to be deployed along the road are small in size and have low energy consumption. These sensors run on both battery power as well as solar energy. They have the capability to draw solar energy so that they can use sunlight for functioning in bright and sunny condition and the battery power for functioning at night or in cloudy or foggy condition. Sensors
used in the Wireless Sensor Network for traffic signal systems are mainly of two types:
1) Intrusive type
2) Non-Intrusive type

1) Intrusive types of sensor are kept under the road and sense the traffic waiting at the signal. This type of sensor has the same working principle as that of a metal detector.

2) Non-Intrusive types of sensor is fitted on the road. The installation of this type of sensor is easy as no cutting of road is needed to be done. Non-intrusive sensor includes acoustic sensors or video image processors to detect the presence of vehicles waiting at the traffic intersection. Although Intrusive sensors are very effective still Non-intrusive sensors are preferred over Intrusive sensors as they are cost-effective, easy to install,immune to natural corrosion and degradation.

V. GOALS AND OBJECTIVES

1. To implement complete hospital management system and analyze the result status.
2. To implement the Indoor Floyd-Warshall algorithm for finding closest possible distance between the doctors and patient in hospital.
3. To implement Expectation-Maximization (EM) data mining algorithm so that we can get idea of the infectious disease in categorized manner like area group, age group, disease group and also for finding common treatment.

VI. PROPOSED SYSTEM

We implement complete hospital management system including many factors like Patient, Ambulance driver, Reception Staff, Doctors, Pathology, Super Admin. When patient click on panic button nearest ambulance is find out. The request is send to the driver. When driver accept this request then system define the exact route by using area partitioning and edge upgrading algorithm. Ambulance driver select appropriate hospital based on patient condition. He send request to hospital reception staff. Hospital reception assign specific doctor to that patient. Pathology ward send all report of patient to doctor like as blood report, ECG etc. We can get idea of the infectious disease in categorized manner like area group, age group, disease group and also for finding common treatment.
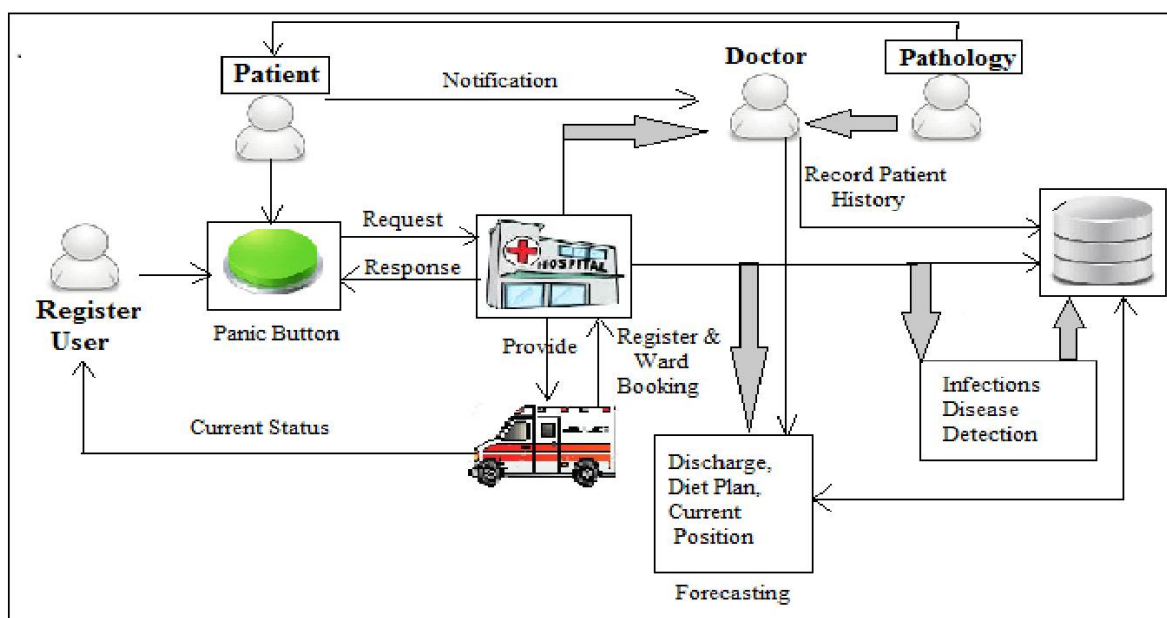
**Figure 1. System Architecture Diagram**

VII. IMPLEMENTATION MODULES

1. **Login module:** This module records only user and password of the user.
2. **Patient module:** It keeps track of all details about both inpatient and outpatient. Patient id, patient name, address, admitted date, doctor name, and room no are entered in a form and stored for future reference
3. **Doctor Module:** It keeps track of all doctors their id, name, address, specification.
4. **Ambulance Details:** This module records all information of ambulance and ambulance driver.
Reception Module: It keeps track of all details of patient and doctors. They store Patient id, patient name, address, admitted date, doctor name, and room no are entered in a form and stored for future reference.
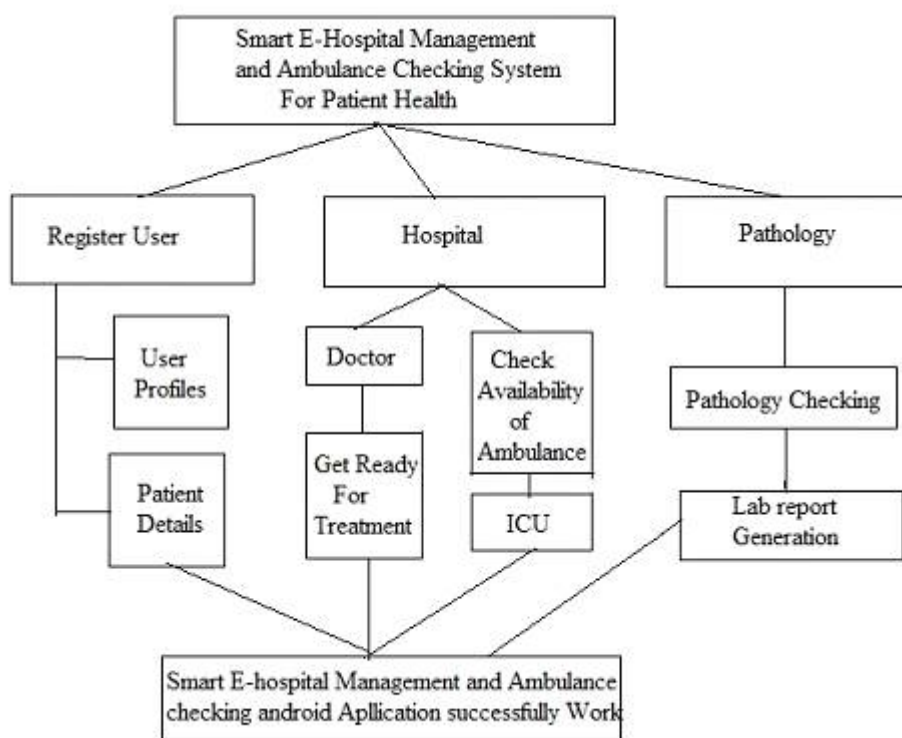
VIII. ALGORITHM

1. Algorithm for Floyd-Warshall:

Input: d matrix of distances, Integer max value represents positive infinity.
Output: Finds all shortest paths among all pairs of nodes p i.e. matrix of predecessors.
Method:Use construct Initial Matrix Of Predecessors(d);

2. Algorithm for Expectation-Maximization (EM) data mining:

Using this algorithm we can dynamically collect the data from patient like forming a particular age group, we can create cluster of area wise, date wise, age group wise etc, Again using this algorithm we can dynamically call this clusters, example we can also call date wise report of particular age group data.

IX. DEVELOPMENT ENVIRONMENT

The proposed system requires Eclipse that is an open source software development environment. Eclipse consists of an Extensible plugin system and an IDE. The Android project has been developed in the Helios version of Eclipse, as it has plugins that are mainly used for Android.

7.1 Android SDK: Integrated Development Environment (IDE) is used in Android development in order to make it more straight forward and quick. It has been recommended for the developers because of its simplicity in working. Android is basically a multitasking platform. To give an example, the application has one application for navigation,

another application for games, and another messaging. These applications can work simultaneously because of this multitasking ability of the Android platform.

7.1.1 ADT Plugin: ADT (Android Development Tools) is a plugin developed by Google. Its main purpose is for developing Android mobile applications in Eclipse. It makes it easy and convenient for all the Android developers working in Eclipse environment to quickly create Android projects and debug the programs whenever needed.
Text editor should not be used in the development of large applications having a large amount of code as the text editor cannot highlight wrong spellings.

7.1.2 Android Emulator: Android emulator is a virtual mobile device which is included in every Android SDK which runs on the users computer. Android emulators are used to test Android applications, so there is no need of any physical device.
Android emulator supports Android Virtual Device (AVD) configuration, which in itself is an emulator containing specific Smartphone Operating System. Using AVD, one can easily test his applications.
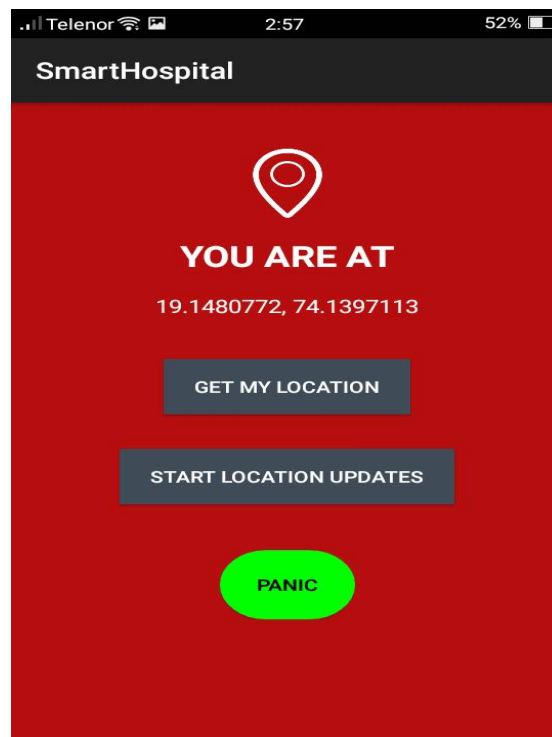
X. RESULT

Figure 2. GUI
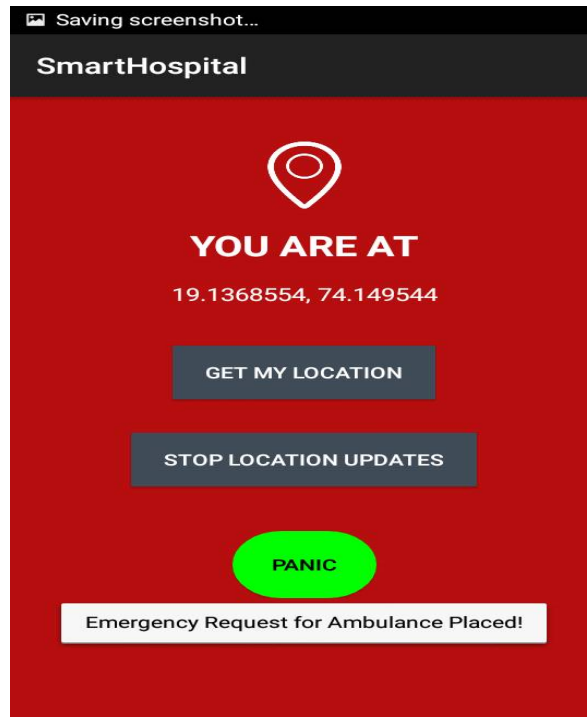
Figure 3. Putting Request to Nearest Ambulance
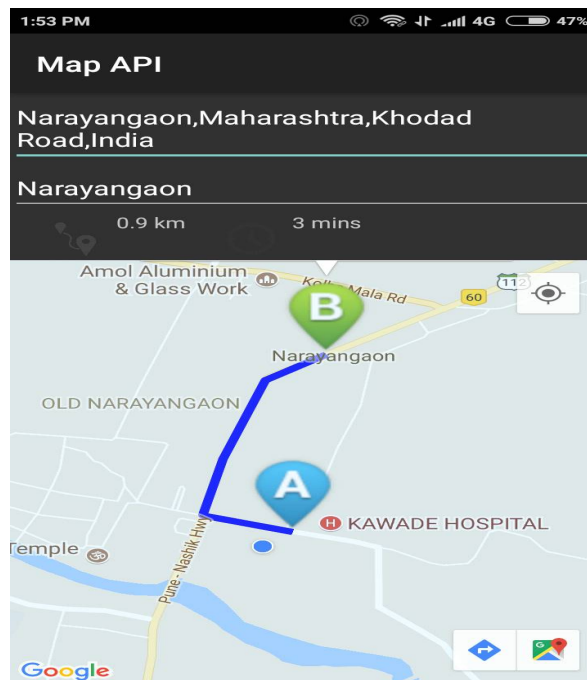
Figure 4. Showing route

XI. CONCLUSION

The key idea of developing this system is to provide timely help to the patient and elderly people in critical situation. An alert message about patient's condition is sent to the ambulance driver for immediate help. A prototype of the system has been successfully designed and tested for the same. The proposed system is Hospital Management System. We can enhance this system by including more facilities like pharmacy system for the stock details of medicines in the pharmacy. Providing such features enable the users to include more comments into the system.

XII. FUTURE SCOPE

The proposed system is Hospital Management System. We can enhance this system by including more facilities like pharmacy system for the stock details of medicines in the pharmacy. Providing such features enable the users to include more comments into the system. This application offers a lot of scope, in the future by integrating more number of sensors. And also other system like intrusion detection or object finding can be integrated with this system.

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