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Domain Specific Search of Nearest Hospital and Healthcare Management System

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Abstract: This paper proposes Android Based Tracking for EMS (Emergency Medical Services) on cloud that directs the emergency patients to most nearest and appropriate hospital for his emergency in an unknown area. It also describes a mobile system that enables electronic healthcare data storage, update and retrieval using Cloud Computing. It is observed that people in unknown area are in severe danger if they didn't able to find hospital quickly. In emergency case a single minute counts. So it is very important that automatic applications must be used for decision making, Maintain up to date status of the hospital and saving the time which can save life of the patient. The proposed system locates nearest available hospital, contacts its ambulance emergency system, accesses a Electronic Health Record of emergency patient that can critically assist in pre-hospital treatments. The system will identify availability of the nearest available specialized hospital all through EMS server which provides continuous information about the incoming patient to the hospital.

Keywords: Emergency Medical Service, Health Record, Hospital Tracking, Cloud Computing.

I. INTRODUCTION

With the growing social pressure, most people are facing with health problems and modern social accidents occur frequently. It is more important to design a health security system for people. As mobile phones play more and more important role for people, it is the best choice that the system will be deployed on mobile phones. This System provides various features to the user of the system and the Hospital. In case of an emergency, the system finds the optimal route for the nearby hospital give them alert with the location of the patient. The system provides different features to users and hospital. The user can find the optimal route to the specific hospital it will also give detail about hospital facilities so that user has the prior knowledge of the hospital e.g. beds available, number of Doctors available with their specialization. The system will also maintain Health record and prescription given to the user. For hospital's perspective, the system will provide all health related information of patients with prescription to the hospital. Unlike, other healthcare systems this is useful and helpful for the senior people and chronic patients to

give alert in case of emergency by alarming to nearby hospital while the other systems are separated from the emergency alarm system, so deploying the systems on cell phone is undoubtedly a better choice. As a carrier of emergency alarm and healthcare management system, there are some advantages for cell phone.

The cell phone is convenient to carry. As People always carry a cell phone with them, in case of emergency people can trigger an alarm and can get emergency service irrespective of the location familiar to them or not , anywhere and anytime .User can make a phone call to their friends and family, and with the help of GPS chip, their location can be acquired. For this application, Android Phone has been chosen as a platform. Android is a mobile operating system initially developed by Google. Android is an open source system, so we can modify it to fulfill the specific needs by changing or rewriting the source code. The main objective of this application is to provide quick emergency service to the patient in a case of emergency independent of his/her location on a click of a button as well as it also provide all health related information including medicinal prescription related with the person to the hospital ,for this

- The system will maintain the health record of the user.
- Make sure the location of the user.
- Find the optimal path to the hospital.
- Maintain up to date status of the hospital.

Hospital Services are needed on an emergency and daily basis and HIS plays a crucial role. Hospital services are customer and society sensitive and the quality of HIS and service of hospital staff needs to be precise and of highest standards. Today's hi-tech Hospital services are predominantly provided by private players in the market at increased costs despite low cost competition by public sector hospitals. OECD report (2012) finds that attempts to control costs by regulatory means, such as reducing fees paid to healthcare providers and rationing user access, have typically only been temporarily successful. E-Hospital Management System provides the benefits of streamlined operations, enhanced administration & control, superior patient care, strict cost control and improved profitability. Due to business and legal demands—like the Healthcare Insurance Portability and Accountability Act (HIPAA) of the United States as a Global

norm healthcare organizations are fully realizing the urgency to integrate their businesses. Unfortunately, most of the health information systems are still proprietary and often only serve one specific department within a healthcare business. This represents a significant obstacle to business integration.

II. RELATED WORK

Yuanyuan Du, [2] give the idea about an emergency alarm and healthcare management system, which is mainly deployed in an android-based phone that is convenient to use and carry. A healthcare emergency alarm system is deployed on an independent device, wired or wirelessly linked to a gateway, and then connected to the hospital or emergency center. But the disadvantage of such systems is getting out of the coverage of the gateway, the system won't work anymore. However the life reminder function is useful and helpful for the senior people and chronic patients to give a friendly reminder for medicine and so on. But most of the healthcare management system is separated from the emergency alarm system, which means the users have to keep two systems at the same time. Apparently it is not convenient at all. Li-Linchen [3] gives the idea of particular Taiwan country. Taiwan has steep landforms. Forest workers, farmers in mountainous areas and tourists visiting have experienced injury or sudden health conditions in mountainous areas; however, because of inconvenient transport or traffic controls, some of the injured people could not reach hospitals promptly, eventually dying. To reduce the time required for people in rural areas to reach emergency care services and prevent the above tragedies, an "Emergency Medical Service Support System for Patients in Rural Areas" was developed.

This system aimed at supporting the current emergency and rescue command center. In this paper author has discussed how the Emergency support center used for data entry, mapping, and confirmation. This system contains five subsystems; the systems of the emergency support center, emergency departments, and ambulances are conducted on computers installed with a program designed. The systems for the patient side and the traffic control center were designed with a cell phone interface as an Android application. Hsiao-Hsien Rau, [4] conducted a study to give the idea of in-Hospital and pre-hospital subsystem. In this paper, Hsiao-Hsien Rau, have considered variables about nearest hospital for emergency patients (like Service radius of responsibility for station, All of the hospital in the service radius, Average travel time from accident place to hospital, Average survival rate of the Emergency Room in hospital, Average waiting time of the Emergency Room in hospital, The maximum patient number that Emergency Room can handle, The number of patients who is already in the Emergency Room) Cloud Computing provides functionality for managing information data in a distributed, ubiquitous and pervasive manner supporting several platforms, systems and applications.

Yu Chen presents the implementation of a mobile system that enables electronic healthcare data storage, update and retrieval using Cloud Computing. A number of Cloud Computing platforms are already available for pervasive management of user data, either free or commercial. The majority of them however, do not provide to developers, the ability to create their own applications and incorporate Cloud Computing functionality, apart from Amazon AWS. [6] The author Abdelmajid Khelil gives an idea about questionnaire system. The purpose of questionnaire system is to gathering information from a target population by employing Expert System techniques. The questionnaire system focused on ubiquitous questionnaires. Author describes Mobile Healthcare Questionnaire Service Framework. Framework focuses on providing mobile healthcare questionnaire service to users and users can access the questionnaire services and check their health status at any time and at anywhere via mobile devices with the support of Web technologies. Framework is not designed just for the delivery of a single health index for a disease. If necessary, it can deliver rich information on the health status of users.

III. PROPOSED SYSTEM

A. Research Methodology

Huge database will be maintained of all the hospitals, Clinic and Blood bank over the server. So proper data mining will be beneficial to track out the optimal hospital in emergency case. The User or Patient will first register to the application and his data will be saved over the cloud. Proposed system of Domain Specific Tracking for Optimal hospital On Cloud in EMS Using Android OS is using A* algorithm for find the nearest route. A* uses heuristic approach to find nearest node within different cluster the alarm action will send emergency messages and calls to the users nearby hospital, the emergency message will include the location information, in order for the rescue staff to locate the user and health record of the patient. User authentication is done according to the role based access control. A new user has to register him-self for accessing the content of our system. Registered user logins with the registered username and password. Using the information over the server EHR of the patient will be automatically generated and forwarded to the selected hospital for pre-medical treatment. We will maintain data of clinic and blood bank over the server. This will be used as a extra service to find clinic in city for particular specialty (e.g. Gynecologist, Eye Specialist, Dentist) and also find blood bank. User will fill his or her personal and medical details while registration which will be user to generate Electronic Health Record (EHR) the OHT (Optimal Hospital Tracking) system track out the optimal hospital for the patient using the variables.

- Type of Emergency(e.g. Heart Attack, Paralysis, Accident)
- Availability of Doctor
- Distance from the patient

B. System Architecture

1. Client Side and Server Side Client Side

- Graphics User Interface of Electronic Health Record for filling personal and medical information on cloud

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- Graphics User Interface for editing the information and updating it on server
- Emergency will be selected i.e. accident, heart attack, burn case etc. and send it to server
- Also contains some user useful services like Tracking Blood Bank and Clinic Module

2. Server Side

- Then client accepting request, server gets activated and searches out nearest hospital.
- It tracks out location of patient.
- It fetches the coordinates and type of emergency from client.
- Search nearest hospital depending upon variables
- Add the all hospital information into database which is present on cloud and update it regularly.
- Generate EHR of patient by pressing the emergency button of phone in case of emergency and send it to selected hospital for pre-medical treatments.

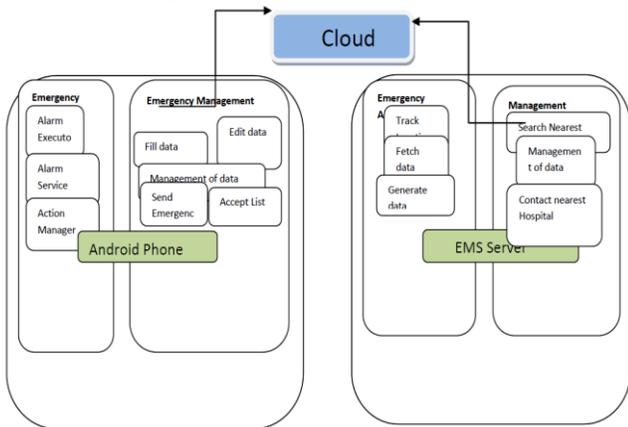


Fig.1. System Architecture.

IV. RESULT

Results are formed such as Android EMS and Patients details as shown in below.

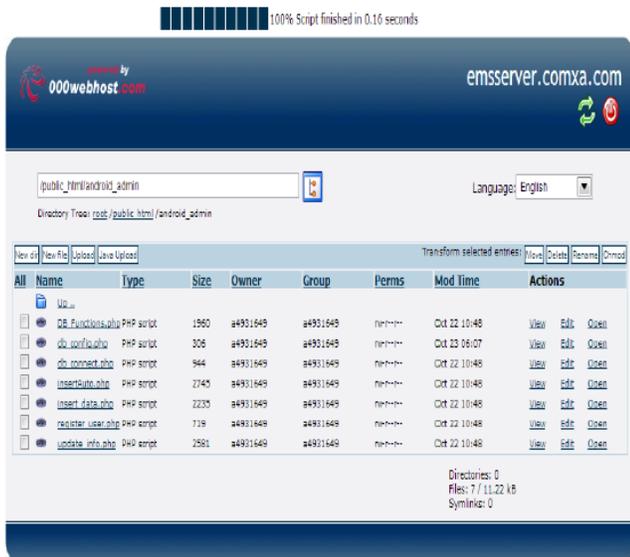


Fig.2. Snapshot of Android EMS.

Fig.2 give the idea about Android EMS in this SQL query also executed as well as present the database using PHP My Admin. After analyzing found that fields shown in Fig.2 are require in order to get required result and have complete information of patients. This information is basically known as medical history of patients.

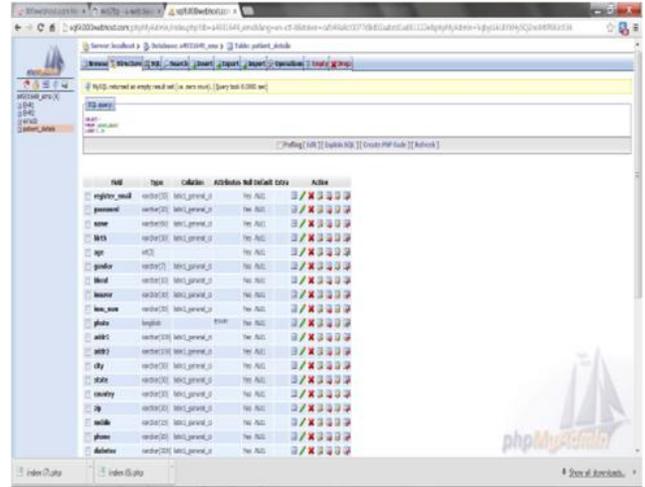


Fig.3. Snapshot of Patients Detail.

V. CONCLUSION

Electronic Health Record is a key factor playing an important role towards the successful adoption of mobile healthcare systems. EHR serves the chronic patients with more convenience and safety by providing medical details of patient for premedical treatments. EHR can be also used by people to keep and maintain their health record on cloud for convenience and safety and future work is Implement Nearest Distance Tracking Algorithm, Tracking Different Parameter like Blood module, Clinic Module. Hospital Information Maintenance and database update, Deployment on Cloud Improve the Graphics User Interface.

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