International Journal of Engineering Research and General Science Volume 3, Issue 6, November-December, 2015
ISSN 2091-2730

Android Based Healthcare System Using Augmented Reality

Vaishnavi Chidgopkar[1], Raksha Shelar[2,] Shweta Patil[3]

1,2,3 Department of Computer Engineering, Padmashree. Dr. D. Y. Patil Institute of Engineering

Management and Research, Pune, India.

rakshashelar3@gmail.com , contact no: 9011545966

Abstract— Android mobile phone most important part of today's lifestyle. Currently people use their mobile for calling as well as for other purpose like searching information or any location using internet and GPS, playing games, etc. It observed that people in unknown area face difficulties to find hospital quickly. In emergency cases even single minute is important so this smart application helps person to quickly locate the healthcare utility. The aim of this paper is to build Intelligent Healthcare Management system using Android OS and Augmented Reality concept [4]. So any person can access medical information, like Hospital's contact details and address, contact details of Ambulance service and also can find out nearer hospital and medical store at anytime from anywhere. We must ensure that a person when visiting places need not have to worry about, where is the hospital or medical store and the contact number of ambulance .Using this application all the information is accessible on the android device and also in user customized format. We are using JSON parsing to keep updated record about doctor's contact details and their location.
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Keywords— Android operating system, Augmented Reality, JSON, GPS, Google map, GPRS, SQLite.

INTRODUCTION

In this growing age of technology it is necessary to have a proper healthcare management system. This application runs on Android device. It helps patient to query their symptoms and get the hospital location and also it helps user to get the location of medical stores and ambulance. Patient can easily access all the healthcare utility regardless of their current location. We are using Augmented Reality concept using android phone [5]. Healthcare application uses camera of phone to access location. Augmented reality is One type of virtual reality. It can be used on any type of screen and connected devices. It is related to mediated reality, in this, view of reality is modified by computer. AR is used in many applications like entertainment, military training, engineering design, manufacturing, robotics etc [4]. First this application ask to select location , after selecting location, application accepts the symptoms from the user, process the data, identifies the particular disease and provide appropriate hospital's contact details using JSON parsing. The advantage of application is user can also search the exact location of hospital or medical store. This technology utilizes various sensors embedded in the mobile device.

Existing system

Existing system only provides the information about doctor, and it just provides contact number, but it fails to provide exact location of hospital. In existing system user can access only predefined location, it cannot access the location other than previously stored location provided in the application.

Proposed system

In this application user can access hospital regardless of his location, and can also locate the nearby medical store and ambulance service provider. The key feature of this application is using augmented reality on android platform. This is done by AR (Augmented Reality). This AR Technology makes use of various sensors embedded in the mobile device, like Location sensors i.e.; GPS, the location sensor determine user's current location [1]. Google Map is used to find particular location or to trace the route between any

two locations but it simply provides the top view of the map so it make confusing situation for user between the mobile standard north that is fixed, and the frequent position changing of the user in real time .To address this problem we are developing an application that allows user to select location and then provides options to select parameters like hospital , medical store or ambulance .If user selects parameter as hospital then application provides list of doctor's type then user can select the type of doctor from list like dentist, cardiologist, orthopedic, Dermatologist etc, and it automatically finds your current location and plots it on a map using an marker and provide an short description on it about the hospital. If user selects Ambulance as parameter then application provides list of the phone numbers of ambulance services provided in that particular area. In this application all data is link through Google. There is no need to manage separate data base. This data base is redirect as per user requirement.

System Architecture

Fig shows architecture of proposed system. It consists of GPS, Google Server, Data base, LBS (Location Base Sensor).

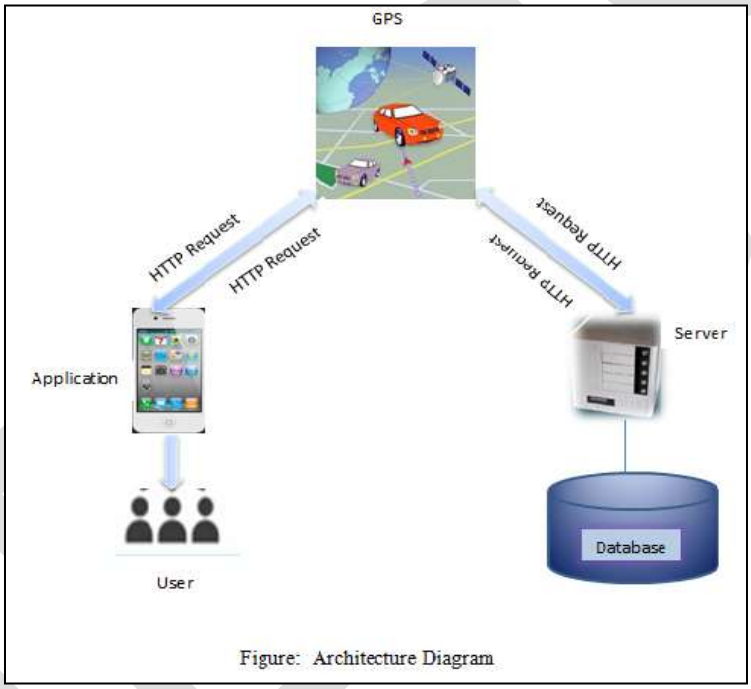

Figure: Architecture Diagram

a) GPS (Global Positioning System)

It is a space based navigation system. It provides location at any time in any weather situation. this concept is based on clock. The current GPS system consists of 3 major segments, 1) space segment (ss) 2) control segment (cs) 3) user segment (us). GPS compute difference between time and signal from different satellites to trace the user's exact location. A-GPS (Assisted GPS) is new technology which is used to integrate the mobile network with GPS to give better accuracy.

b) Data base

SQLite - SQLite is relational database management system which implements server less, zero configuration (means no setup or administration needed), self-contained (no external dependency), transactional SQL database engine. It is used to reduce the latency in database access. It is very small and light weight. It is written in ANSI-C and provides easy way to use API. Separate server process or system to operate is not required by SQLite. To create database, define tables in it, insert and change rows and run queries a standalone command line program is used. To create new SQLite database 'sqlite3' command is used, there is no need to have any special privilege to create new SQLite database.

c) LBS (Location Base Sensor)

This service is offered through mobile phone. Location-based services or LBS refer to a set of applications that accomplish the knowledge of the geographical location of a mobile device in order to provide services based on that information [2]. It is depend on location of mobile devices.

Uses of LBS: -

- Store location
- Travel information
- Roadside assistance
- Fraud prevention

5. Technology & Concept

I. Augmented Reality

1. Augmented reality is one type of virtual reality [1]. It can be used on any type of screen and connected devices. It is related to mediated reality, in this, view of reality is modified by computer. AR is used in many applications like, military training, engineering design, robotics, manufacturing, entertainment, medical application, wearable technology etc [7]. Components of AR are GPS, POI (Points of Interest).

POI: - It provides location information of any place. This information includes POI titles, description. It interacts with environment.

II. JSON

JSON means JavaScript Object Notation. It is an independent data exchange format and is the best alternative for XML. It is easy to read and write for human. It is language independent, self-describing, easy to understand.

Android provide four different classes to manipulate JSON data:

1. JSONArray.
2. JSONObject.
3. JSONStringer.
4. JSONTokenizer.

Component of JSON:

1. Array ([): Square ([) bracket represent JSON Array.
2. Objects ({): Curly ({) bracket represent JSON Objects.
3. Key: It is just a string. Pairs of key-value make up a JSON Object.
4. Value: Each Key has value that could string, integer, double.

Acknowledgement

It gives us great pleasure in presenting the paper on 'Android Based Healthcare System Using Augmented Reality Concept'.

We would like to take this opportunity to thank our internal guide Prof. Suvarna Patil for giving us all the help and guidance we needed. We are really grateful to them for their kind support. Their valuable suggestions were very helpful.

Conclusion

In this paper we have presented an android based healthcare management system with augmented reality. In this paper we take advantage of augmented reality on an android platform to address the location tracing problem. User can access the correct information at exact location in real time. The aim of this paper is to build Intelligent Healthcare Management system using Android OS and Augmented Reality concept [4]. So any person can access medical information, like Hospital's contact details and address, contact details of Ambulance service and also can find out nearer hospital and medical store at anytime from anywhere.

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