ANDROID BASED HEALTHCARE SYSTEM USING AUGMENTED REALITY

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ABSTRACT

In Digital Age people use their mobile device for many purpose like searching any location or information using GPS and internet, playing games, etc. People in unknown area face difficulties to find hospital. The aim of this paper is to build Healthcare system using Augmented Reality concept and provide flexibility to people to access medical information, like doctors' address and contact numbers, contact details of Ambulance service and also can find out nearer medical store and hospital at anytime from anywhere. AR (Augmented Reality) is innovative technology which provides a real time world environment and let you present an enhanced view of real world [4]. Location tracking technology could make a big influence on human health and well being in future. This system provides all the information on the android device. Using JSON parsing we will keep updated record about doctor's contact details and their location.

Keywords — Android operating system, Augmented Reality, Google map, GPS, JSON.

I. INTRODUCTION

Now days it is necessary to have a proper healthcare system. This application is based on Android device. It helps people to get the hospital location, contact details of ambulance services provided by social organization and the location of medical stores. People can easily access all the healthcare utility despite of their current location. We are implementing Augmented Reality concept on android phone [5]. This Healthcare system uses camera of phone to access location. Augmented reality (AR) is one type of virtual reality. This technology mainly works with the sensors [4]. It can be used on any type of connected devices and screen. AR is used in many applications like medical, manufacturing and repair, engineering design, entertainment, manufacturing, robotics, military training etc. In Our application first user selects the radius, after selecting radius, user will select the category of doctors, process the data, plot the location of hospital, and provide proper doctor's contact details using JSON parsing. This technology uses various sensors embedded in the mobile device.

II.PROPOSED SYSTEM

In this application user can access hospital despite of his current location, and it can also locate the ambulance service provider and nearby medical store. The important feature of this application is augmented reality. AR makes use of various sensors embedded in the android phone [4], like Location sensors i.e.:- GPS, the location sensor find out user's current location [1]. Google Map is used to find any particular location or to trace the path

between any two locations but it simply deliver the top view of the map so it make complex situation for user between the mobile standard north (that is fixed), and the frequent change in position of the user in real time.
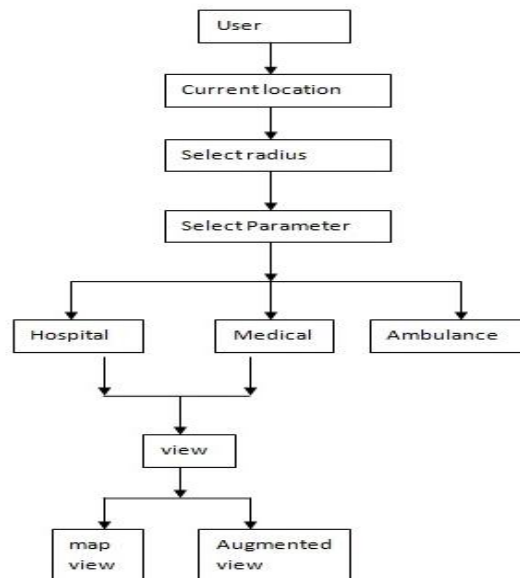

Fig 1: flow of system

To overcome this problem we are developing an application that allows user to select location and then gives options to select parameters like category of doctors, medical store or ambulance .(The flow of proposed system is given in above diagram) If user selects category of doctor then application provides list of doctor's type then user can select the type of doctor from list like Dermatologist, cardiologist, optician, dentist, pediatrician, gynecologist, neurologist, orthopedic, etc. and it automatically identify your current location and plots it on a Google map using an marker and provide an short depiction on it about the hospital. If user selects Ambulance as parameter then application provides list of the contact numbers of ambulance services provided by social organization in that particular area. The system supports two navigation modes and the user can switch between them by pressing a button on the mobile device

A. Map view

In map view, the system is continuously choosing the higher accuracy location sensor by comparing between its GPS and signals from the network provider, and using these to determine the user's location. After the device initialises the user's location, it displays that location on the map. After determining the user's desired destination, the system connects to the Google server using the Google Maps Application Programming Interface (API) in order to obtain route information. The calculated route information is sent by KML format (which contains a list of geo-coordinates) and it is drawn on the map. The user is provided an option in the map view to convert to from a street map view to a satellite view.

B. AR view

In the AR view the route information is communicated through an arrow image. In order to visualise the route line correctly on AR view the have sine formula is applied from the given route information by the Google map server. The directional arrow is superimposed on the real world scene that is being displayed on the mobile device's screen, so enhancing the sense of location and route finding.

In this application all data is link through Google (as we are using JSON parsing). There is no need to manage separate data base.

Screen	Features
Splash Screen	Click on icon to open app
Home Screen	Main screen that show all the specialization fields
Map view Screen	The user can view the route to the desired hospital with the help of Google Map
Augmented view Screen	The user can view the location of hospital, doctor's information.

Table 1: system operation

The location need to be real time because all users have access to the map, they need to know where their exact location is. There are two types of location coordinate to find exact location of user.

1. Network Location Provider.

2. GPS Location Provider.

Network and GPS Location Provider are two different ways to get Android device location (Lat and Long).Both have got their own advantages .for example ,In in-door situation GPS may not provide location quickly and Network Location Provider is quick. Network Location Provider uses our mobile connectivity provider and gives nearest tower location where GPS give exact location where user is stand.

GPS Location Provider

GPS is a technology which determining a location using signals from a network of satellites. This satellite transmits data continuously. All that's needed is a GPS receiver and a clear view of the sky to receive signals from at least three or four GPS satellites. The signal contains data that a receiver uses to compute the locations and make other adjustments which are needed for accurate positioning. The basic GPS service provides users with approximately 7.8 meter accuracy, 95% of the time, anywhere on or near the surface of the earth. Common uses of GPS include vehicle navigation, tracking the location of business assets, mapping for outdoor recreation.

III.SYSTEM ARCHITECTURE

Following"fig" represents architecture of proposed system. It consists of GPS, Google Server, LBS (Location Base Sensor).
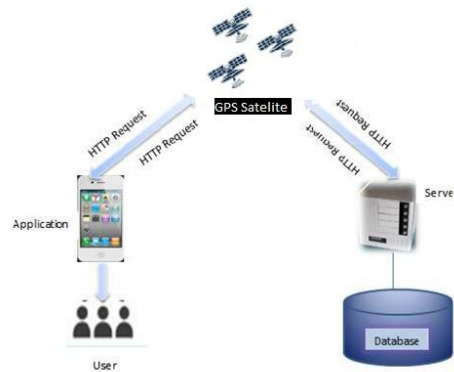
Fig 2: system architecture

C. Working of system

- Retrieving GPS data and sending an automatically-generated message

System receives GPS signals from satellites and stores it in user's vicinity, and then GPS unit calculates data which include three-dimensional velocity, position and time information.

- Processing of GPS data and storing of GPS data into database

GPRS communication Network is involved to act as an intermediary that connects the both ends the user and the server. GSM terminals are used at both ends. GSM terminal at sender's side process the location information acquired from the GPS unit and sending it to web server via Short Message Service and the other GSM terminal at the server side is responsible for transferring the data to the local device. Finally, the program embedded in the device will plot users' position onto Google Maps.

Propose system allow user to use Augmented Reality Concept. So a user can create query by scanning the nearby street with a camera in real space and searches accessible content along the street using information space. Then, system plots the results on both sides of the street so it solves the issue of Overlapping.

D. LBS (Location Base Sensor)

Location-based services use geo-data of mobile device to provide information. It is refer as 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]. LBS is use to track user location and also provides traffic information, it also provide security for device.

IV.TECHNOLOGY AND CONCEPT

- Augmented Reality:

Technologies are developing continuously that changes the nature of work and human lifestyle. In current world numbers of devices are using augmented Reality concept [1]. Aim of AR is to combine virtual and real scene together to achieve that virtual ones are belong to the real world. Being characteristic of integration of virtual and real scene, many applications of Augmented Reality are emerging, such as in field of education, medical treatment and entertainment [7].

Types of Augmented Reality:

- Location based AR
- Projection AR
- Recognition AR
- Outline AR

We are use Location based AR. It consists of Marker based and Marker Less AR. Marker based AR uses camera while Marker less AR uses GPS and Digital compass sensor.

V.CONCLUSION

In this paper we have presented an android based healthcare application with augmented reality. so in emergency situation or at unknown place our system provides facility to find hospital location, doctor's address and contact details. augmented reality concept simplifies navigation problem of google map.

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