Intelligent Mall Navigator Application

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Abstract— This paper is about our project Intelligent Mall Navigator Application. It includes the various techniques like outdoor positioning and indoor positioning. Not only the GPS technique used for outdoor positioning but also various techniques for indoor positioning are discussed here. This handy pocket guide related to malls saves time and provides proper navigation to its users.

Key words: Mall navigator; mall; global positioning system; GPS; outdoor positioning; indoor positioning; navigation; location; application

I. INTRODUCTION

In recent years, mobile communication has become an integral part of human life. No one can live without mobile. Based on the users' growing preference, the developers are also making many useful applications. There exists thousands of application to make human life better and efficient.

The Intelligent Mall Navigator Application is an android based application. When anyone visits mall first time he/she wastes time in roaming. Many of the time it was found that customer visiting mall for shopping face difficulty in finding shops. The task of finding nearest mall from users' current location as well as navigation inside mall should be easier and efficient. This application guides the users for finding nearest malls. One can easily come to know about number of malls located nearby. This application also provides guidance inside the mall according to floor, category, etc. One can easily enjoy shopping by using this application without headache of roaming inside the mall. Due to such application the users' shopping experience will definitely going to improve.

II. LITERATURE SURVEY

Location based services (LBS) exploit the geographical position of a mobile device to provide various services based on that information knowledge [2]. These services are personalized based on users' current location. Location based services has many advantages to mobile services.

There are applications available for mall in foreign country. The mall authorities made such application to improve shopping experience. But these applications are available for individual mall only. These all the existing applications provide shopping features to user but it is restricted to one only.

1Utama mall, Setia City mall, MyMall Pavillion mall etc. are not give feature of outdoor positioning [4][5]. These applications has indoor navigation feature but it doesn't work efficiently. These mall applications are act as guide for a particular mall.

The existing mall applications are inefficient for other users who don't visits that mall. The existing applications are not useful for people in India. So for keeping in mind all the people, there is need of application, which gives user nearest mall location.

A. Various Navigation Technologies:

The different techniques used in the mall navigator application for the navigation purpose. The satellite coverage, Wi-Fi, Bluetooth, Infra-Red, Ultra Wide band are various navigation technologies [1]. The outdoor positioning is done using Global positioning System (GPS). This is nothing but the global satellite coverage which needs line of sight to be maintained within receiver and geostationary satellites. Hence GPS technique is failed with indoor navigation.

In case of indoor positioning the time based techniques like Time-of-Arrival, Time Difference-of-Arrival etc., Angle of Arrival, and Received signal strength can be used for navigation or tracking [3]. The indoor navigation is difficult to implement due to various obstacles within communication, large hardware cost. So indoor navigation is yet not efficiently implemented.

III. IMPLEMENTATION

For developing location aware Intelligent Mall Navigator Application we used Android operating System Mobile platform. The application's working is given as follows.

As discussed earlier the application divided in two parts: one is the outdoor Positioning and the other is indoor positioning. The flow of different activities inside system is shown in the form of flowchart (see Figure 1).

User has to login the application for first time. When user enters valid and appropriate entries in login fields, these values get stored in mobile database. Hence when next time user want to use application he/she need not to login to application again. These values retain in mobile database until the application not deleted from the device.

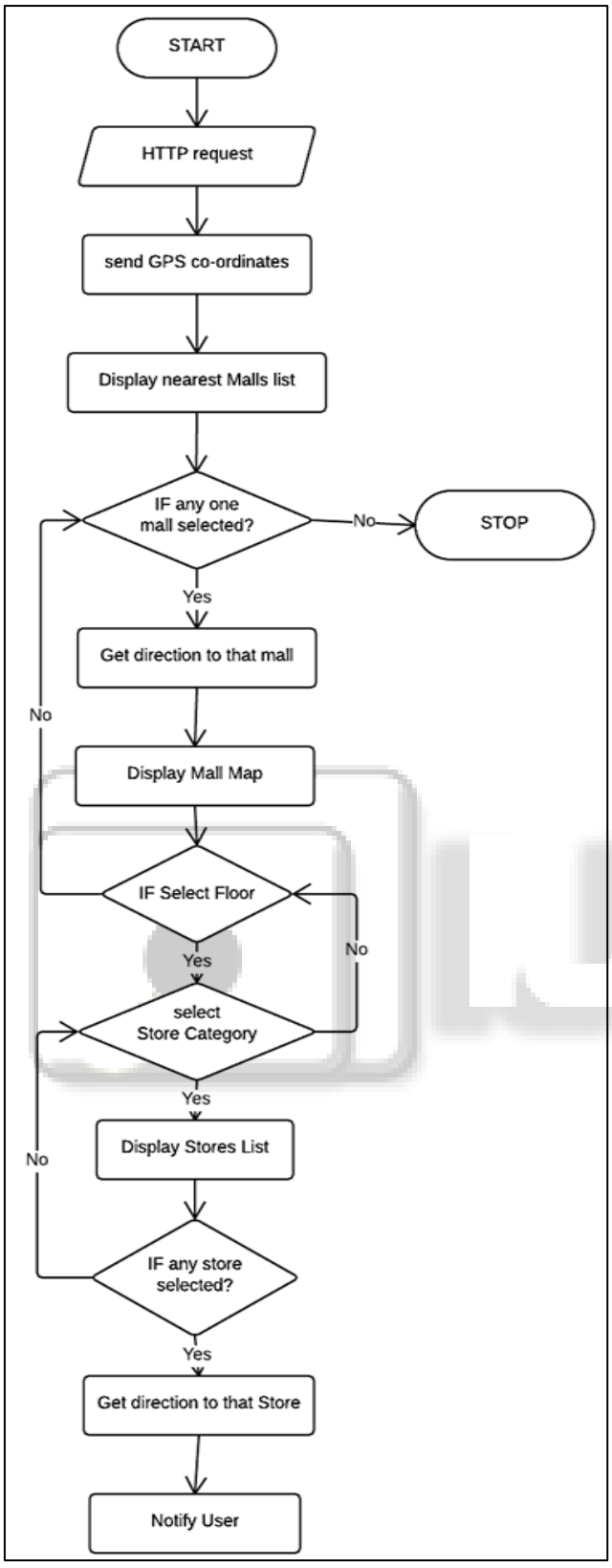

Fig. 1: Flowchart for Mall Navigator System

A. Outdoor Positioning:

Various activities involved are:

Initially, the request for GPS is made. The GPS sends the current location co-ordinates like latitude, longitude and current address etc. Based on the current location of user device the nearest mall List will be shown to user. The application finds the various malls within certain distance range and then it displays a list to the user.

User views the nearest mall list and makes a selection of any one mall among these. The mall selected by user is displayed on map. The Google map shows the direction towards the mall from current location.

If in case user doesn't wish to proceed with application then he/she can exit the application. This facility is provided, if in case, user only wants to see the list of nearest mall then he/she can.

Also notification for user whether he/she had visited a selected mall or not is asked. User can also skip this survey. If user selects any of the entry out of Yes or No then the feedback reply is stored into the database. This database helps to indicate popularity of mall. Or how many users selected the particular mall and visit the same mall are counted.

B. Indoor Positioning:

Various activities involved are:

When user reaches the mall the indoor positioning comes into picture. In indoor positioning a user can see the map for the given mall. This map is nothing but the layout of mall. Layout helps user to track the internal structure of the mall.

Nowadays mostly there are multi floor malls. So user selects floor to find the shops available on the floor. The shops can be viewed based on the users' choice i.e. shop category is chosen by user.

These Indoor positioning helps user to decide whether the shop he/she want to visit is present in the mall or not. Also user can navigate easily inside mall with the help of mall layout instead of roaming to and fro within mall. It saves the time of user. The user can spend more time within a mall as he/she not gets tired while navigating.

Indoor positioning also asks feedback notification to user whether he/she has visited the shop selected. The user selected option gets stored in database. This Database helps to find whether this shop is making profit to mall or not based on the user response. This counts number of users visited the shop and make analysis.

IV. FUTURE WORK

The data stored in database can be used for the business intelligence purpose. The mining can be performed to make decisions like whether shop need to be a part of mall (based on number of users visited shops). The user interface can be enhanced using modern technologies like voice recognition, image processing etc. The upcoming technologies like 3-D internet and animation, virtual reality, augmented reality can be used.

V. CONCLUSION

The role of wireless technologies is expected to increase over upcoming years, due to the deployment of wireless networks. The Mall navigator application is going to be proved as beneficial application. The easy way can provided to reach nearest mall. The application saves time as well as efforts in unnecessary roaming. If user doesn't want to proceed ahead in application, the exit button is provided at each step. The location aware applications have great demand in mobile users. The Location tracking helps to

efficient navigation. Also, there is facility of feedback, which helps mall authority to take decision regarding any shop. Thus, this application going to be a big pocket guide related to mall.

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