INFORMATIVE INDOOR TRACKING

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Abstract— **Global Positioning System (GPS) is the main technology that plays an important role in satellite navigation. The main purpose of GPS is to determine the position or coordinate of an object based on location, time and speed which provide Location Based Services .But GPS cannot be used for tracking and navigation of indoor locations. So in this paper we proposed a solution to find indoor location along with relevant information of particular location. In this paper, percentage of signal strengths obtained from Wi-Fi analyzer in a smartphone were converted into distance between users and each AP. A user's indoor position could then be determined using a formula proposed based on trilateration technique. The solution proposed is with respect to the context of a mall.**

I. INTRODUCTION

Recently, wireless sensor networks (WSN) have been the subject of great interest in many studies because of their wide applications in control, tracking, and monitoring. Location information is a vital aspect of many WSNs. Indeed, the location of each sensor is often required to make the collected information useful. Compared with outdoor localization, the difficulty of indoor localization lies in that indoor maps pay more attention to small areas, large-scale, high precision and subtly display of the internal elements. Along with the rapid development of wireless networks and smart phones, the number of WIFI access points increase dramatically and most WIFI access points locations are fixed. This phenomenon suggests a new direction for indoor localization research in wireless sensor network. Existing wireless localization algorithms require either special hardware support or complex computing, which consuming valuable battery resources greatly, especially comes to smart phones or sensors. The contribution of this paper is that it proposed a new algorithm which increases the indoor localization accuracy along with providing relevant information about the particular localization without any additional hardware support or increasing the computational complexity.

Functionality:
1 Map
2 Data-base
3 Wifi Routers

II. IMPLEMENTATION

In existing system the coverage areas of GPS are still limited that is GPS cannot function indoor and also causes the complete battery drain. Nowadays, as smartphones are becoming more and more powerful, applications providing location based services have been increasingly popular. Many, if not all, smartphones are equipped with a powerful sensor set (GPS, WiFi, the acceleration sensor, the orientation sensor, etc.), which makes them capable of accomplishing complicated tasks. Unfortunately, as the core enabler of most location tracking applications on smartphones, GPS incurs an unacceptable energy cost that can cause the complete battery drain within a few hours. Although GPS is often preferred over its alternatives, the coverage areas of GPS are still limited (GPS typically cannot function indoors). To this end, our goal in this paper is to improve the energy-efficiency of traditional location tracking service as well as to expand its coverage areas .In the indoor environment with each WIFI routers there are some attributes. In our system we will be using the strength that is the level and the frequency for the calculation of the distance of the mobile from the WIFI routers. But as we are dealing with the accurate location finding and also less consumption of the battery we take the assistance from the mobile sensors. The smart mobile has the number of the sensors embedded within it. But for our system we use the accelerometer and the orientation sensors. We calculate the distance value to plot the mobile device location and to check whether the user is moving to check speed and the path change we take the sensor values. It will classify the customers according to the purchased count. On detecting a store at any mall it will provide tracking path to irregular customers and automated notification about the offers to the regular customers, in order to provide information to the customers the store will create a database of the customers .In this proposed system we created an android application which consist of two modules admin and client.

A. Admin Side Functionalities

The main function of the admin is to create project site for that the admin has to use calibration function in order to take the ratio of the specified distance in meters or any unit (here in meters)to the image distance in pixels between any two point. Accordingly he will select a map of the location he wants to upload on the server. After selection of map is done dimensions and scale (in meters) is given to the rooms or the respected store of that particular map. Diagonal points of the room will be set by the admin in order to identify the rooms. Once the rooms are identified it becomes easier to mention the

path between the rooms. According to store or the rooms offers
will be mentioned..

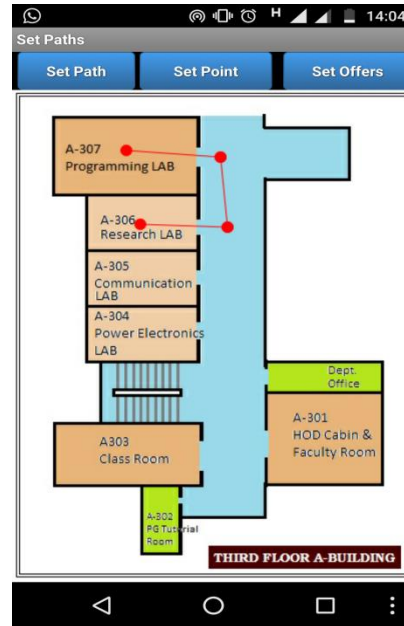Fig 1: Calibration

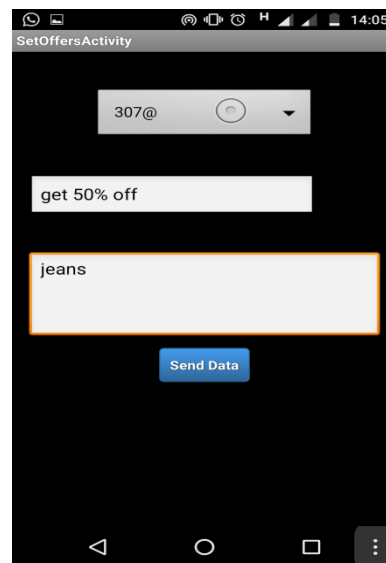Fig 2: Setting Scale

Fig 3: Setting Path

Fig 4: setting offers

B. Client side Functionalities

Once the map of the location is uploaded by the admin on the server client is enable to access it. Client will scan QR code in order to get the map on respected android phone. Once the map is uploaded on the phone destination is searched to get a proper navigated path. Classification is done here between the regular customer and irregular customer. Classification is made according to the purchase count of the customer which will be stored in a database which is maintained by the respected store. If the customer is visiting the mall for first time only navigated path is provided whereas, in case of regular customer navigation along with the notification of the offers by the respective store is given.
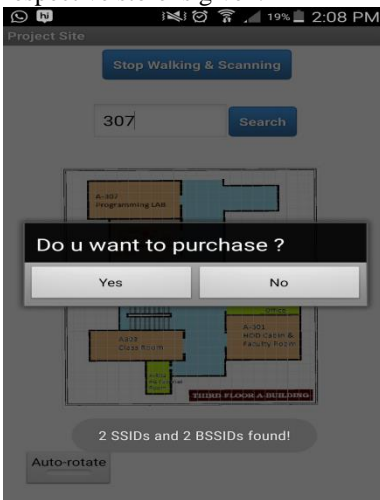

Fig 5: Client Side View

III. BENEFITS

1. Useful at the places where GPS cannot work
2. Reduces the battery consumption
3. Routers are used.
4. Provides the path as well as the information of the location as per the requirement of user.

IV. CONCLUSION

This paper provides technique for indoor tracking using the WIFI routers. The Smartphone sensors accelerometer and the orientation sensors are also used to find out the accurate location of the smart mobile. It is basically an android application. Classification is done according to the customers purchasing count by providing notification about the location to the regular customer and only navigation to the irregular customer. And also maintains the database of the customers. These techniques don't require any additional hardware and as the sensors require very less battery consumption than the GPS it can be used to save the battery life.

V. ACKNOWLEDGEMENT

VI. REFERENCES

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