QR code based indoor navigation

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***Abstract* -Wireless location finding is one of the key technologies for wireless sensor networks.GPS is the technology used but it can be used for the outdoor location. When we deal with the indoor locations GPS does not work. Indoor locations include buildings like supermarkets, big malls, parking, universities, and locations under the same roof. In these areas the accuracy of the GPS location is greatly reduced. Location showed on the map in not correct when the GPS is used under the indoor environments. But for the indoor localization it requires the higher accuracy GPS is not feasible for the current view. And also when the GPS is used in the mobile device it consumes a lot of the mobile battery to run the application which causes the drainage of the mobile battery within some hours. So to find out the accurate location for indoor environment we use the RSSI-based trilateral localization algorithm. The algorithm has the low cost and the algorithm does not require any additional hardware support. With the development of the wireless sensor networks and the smart devices the WIFI access points are also increasing. The mobile smart devices detect three or more known WIFI hot-spots positions. And using the values from the WIFI routers it calculates the current location of the mobile device. We will propose a system so that we can find out the exact location of the mobile device under the indoor environment and can navigate to the destination using the navigation function and also can enable the low consumption of the smart mobile battery for the tracking purpose.**

***Keywords*--Conditional random fields, device-free localization, energy minimization, Markov models, multi-entity tracking.**

I. INTRODUCTION

QR Code Based Indoor localization is a concept that allows the tracking and detection of user that does not neither carries any devices nor participate actively in the localization process. QR code Based Indoor Tracking has a number of applications including minimum distance path, intrusion detection, smart-homes and traffic detection, border protection. Different approaches have been proposed for addressing. The indoor detection and tracking problem that can be categorized into two main groups: Those that require special hardware and those that leverage the already installed wireless infrastructure. Radar-based systems, computer vision systems, and radio tomography imaging (RTI), provide accurate Indoor detection and tracking. However, all require the instalment of special hardware to track the Device free entity. On the other hand, systems that leverage the currently installed wireless networks, WLAN provide a software only solution for Indoor localization and have the advantage of scalability in terms of cost and coverage area . QR code is now days popularly used .Quick Response Code is use for the quickly access the map or the web site.

In this paper, we introduce Indoor Navigation as a system for the accurate and efficient detection and tracking of multiple users or entities in a WLAN environment. This Indoor Navigation based on a probabilistic energy-reduction framework that combines a conditional random field (CRF) with a Given a Received Signal Straight vector from all the streams in the area of interest,the problem of estimating the most probable active user locations is mapped to an energy-reduction problem.

II. EASE OF SETUP AND USE

we introduce Indoor Navigation as a system for the accurate and efficient detection and tracking of multiple users or entities in a WLAN environment. This Indoor Navigation based on a probabilistic energy-minimization framework that combines a conditional random field (CRF) with a Markov model: Given a RSS vector from all the streams in the area of interest, the problem of estimating the most probable active user locations is mapped to an Battery consumption problem.

III. PROPOSED SYSTEM

Proposed System Design in Which Shows the Contained Modules. In the system the user has an android application installed on the smart phone. The area of Wireless Local Area Network(WLAN) based indoor localization, the Received Signal Strength (RSS) fingerprinting based localization technique has been studied extensively. Site survey phase in RSS fingerprinting is always considered to be time-consuming and labor intensive.

IV. PRINCIPLES OF INDOOR NAVIGATION

Indoor Navigation which was first proposed by A.Lin and H. Ling, Doppler and direction-of- arrival Radar for multi-mover sensing. In addition, Instead of using Radar System and the GPS System We are using Wi-Fi Routers And Sensors to achieve the accurate Location of the user.There are 2 Process :

1. Upload the images or blueprint from the Admin.

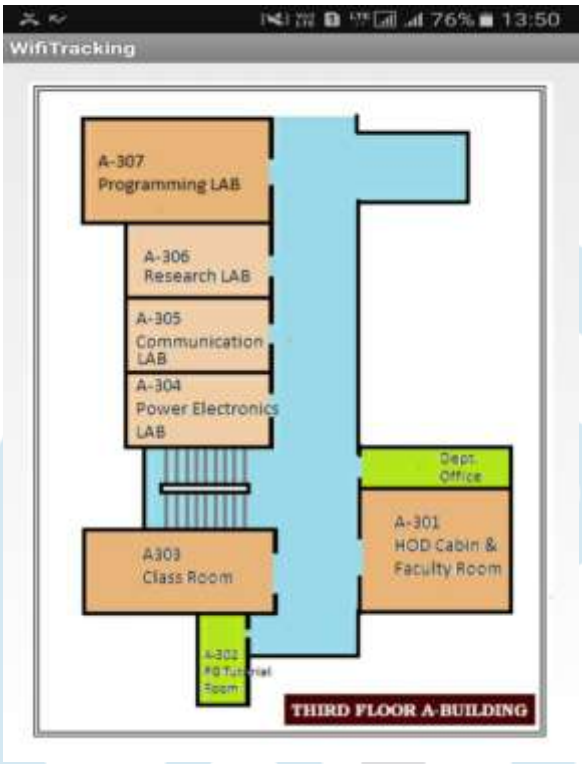

Fig1. Upload the Image By Admin

In the Fig1 uploading the image oir blueprint of the building by admin and set the direction the map and set the room coordinates and set the room on the map

2. Tracking the user

User side application. The user should search the site name After that It shows the map of the site .And then search the room where user want to go. Then Tracking of user can be done and the it shows Exact and Accurate location of the User.

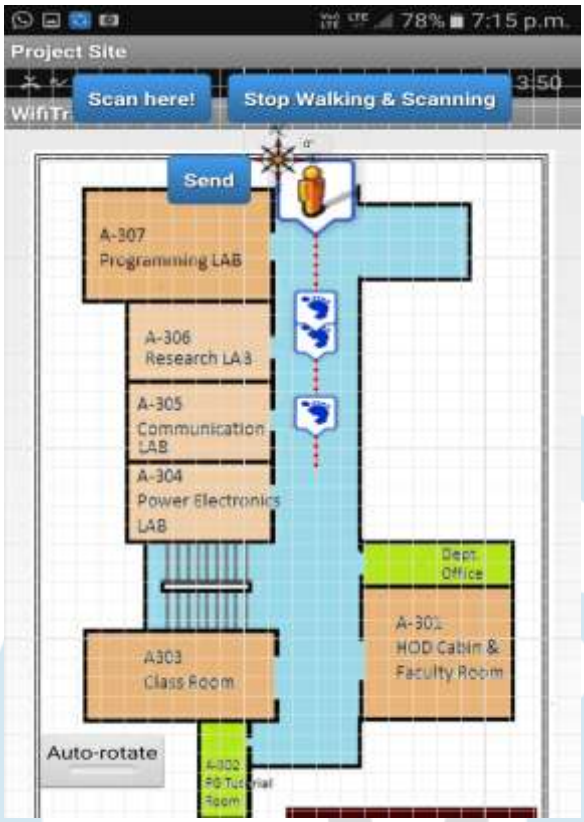

Fig2. Navigation of User

V. LITERATURE SURVEY

[1] The area of Wireless Local Area Network(WLAN) based indoor localization,the Received Signal Strength (RSS) fingerprinting based localization technique has been studied extensively. Site survey phase in RSS fingerprinting is always considered to be time-consuming and labor intensive.

[2] We explore the problem of detecting whether a device has moved within a room.Our approach relies on comparing summaries of received signal strength measurements over time, which we call descriptors.

[3] WLAN Device-free passive (DFP) indoor localization is an emerging technology enabling the localization of entities that do not carry any devices nor participate actively in the localization process using the already installed wireless infrastructure.

[4] Radio tomographic imaging (RTI) is an emerging device-free localization (DFL) technology enabling the localization of people and other objects without requiring them to carry any electronic device.

[5] This paper presents a new method for imaging, localizing, and tracking motion behind walls in real time. The method takes advantage of the motion-induced variance of received signal strength measurements.

[6] SnapTrack uses location servers as an assisted GPS, which means that it receives and stores data from the GPS reference receiver while it is on the network, thereby providing necessary data to mobile units, and it calculates navigation solutions upon receipt of pseudorange measurements from the handset.

[7] Augmented Reality (AR) is particularly well-suited as a user interface for location-aware applications.

[8] RF sensor networks for device-free localization: measurements, models, and algorithms,in this Radio Frequencies can be use for calculating the current location.

[9] A large-scale device-free passive localization system for wireless environments. Use Large scale since the accurate location of the user not specifies. It was only gives the passive location of user.

[10] Synthetic generation of radio maps for device-free passive localization.By using Radio maps Location of the user can display.

VI. SYSTEM ARCHITECTURE

Proposed System Design is shown in Bellow Diagram. Which Shows the Contained Modules. In the system the user has an android application installed on the smart phone.This user then downloads the map of the site where he wants to carry out the tracking. Once the map is downloaded the location of the user is calculated using the data from the wi-fi routers and from the sensor of the smart phone and the location is plotted on the map. Figure 2. Architecture diagram

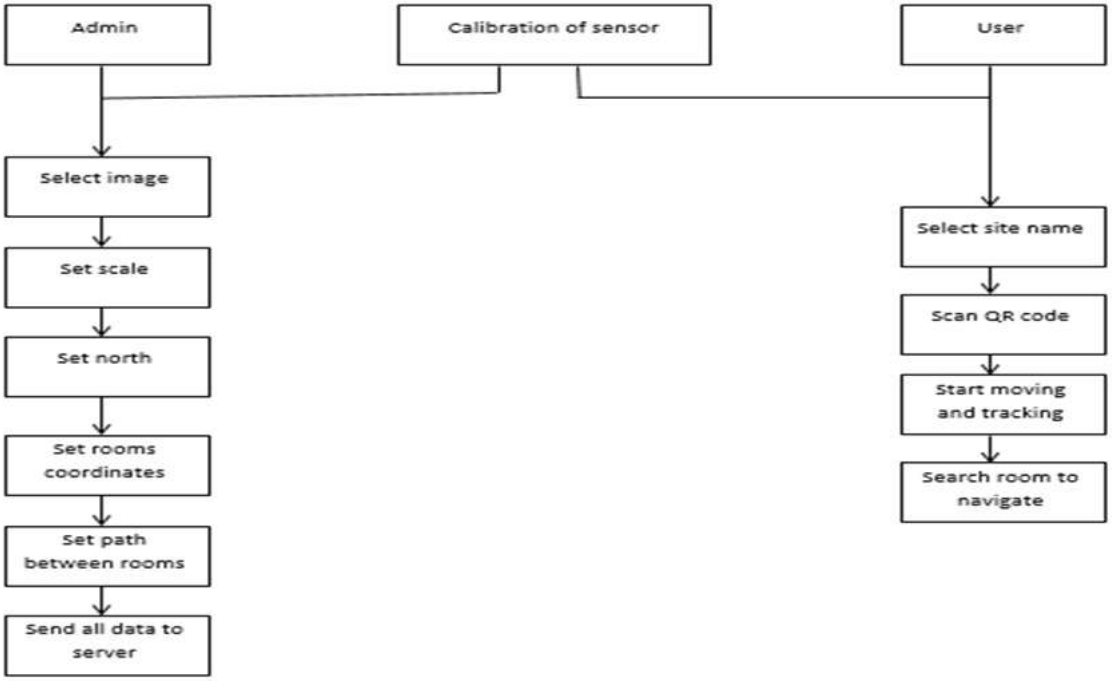

Fig. System Architecture

VII. CONCLUSION

The system provides technique for indoor tracking using the WI-FI routers. The Smart-phone sensors accelerometer and the orientation sensors are also used to find out the accurate location of the Android Device .These techniques do not required any additional hardware and as the sensors require very less battery consumption than the GPS it can be used to save the battery life. So with this the areas under the big roofs which are not tracked by the GPS can be tracked and also can be navigated over the site map.

In future the system can be integrated with the outdoor location tracking system one system can be formed for tracking any location on the smart-phone.

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