Survey on WIFI based Indoor Tracking System

Payal Tat[1], Manisha Nimbekar[1], Aboli Varpe[1], Sayali Gadade[1], Swati Khodke[2]

Bachelor of Computer Engineering, JSPM's Bhivrabai Sawant Institute of Technology and Research, Pune, India [1]

Professor, Computer, JSPM's Bhivrabai Sawant Institute of Technology and Research, Pune, India[2]

Abstract: We typically use wireless location network for getting direction to a particular area using GPS. We can effectively track and map the location we visit, however GPS cannot be applied in the indoor environment. Hence to save the cost we use RSSI- based trilateral location algorithm. This algorithm is one of the most used algorithms in sensor based network using Wi-Fi. We can calculate the current location of the mobile devices and navigate to a particular destination and use minimum mobile battery. Indoor navigation is one of the newest innovation in the mobile technology and we use extensively.

Keywords: Wifi, Tracking, Indoor, Mapping, blueprint, navigation

I. INTRODUCTION

Wi-Fi based application typically used Wi-Fi connection to send and receive data ultimately interacting with people on the internet can be done with the help of Wi-Fi. This is the primary usage of Wi-Fi but instead of just sending and receiving data it can be used to effectively map the multiple location in the vicinity in the implementation of Wi-Fiprimarily we used network based cables to convert wire connection to unwired connection Wi-Fi is a technology which allows devices such as mobile phones, tablets, etc. to connect to the WLAN networks it mainly uses 2.4ghz UHFS and 5GHZ SHF radio bands. Typically WLAN is password protected but it may be open which allows any device to access the resources of LAN network.

Tracking is used typically to search and find a particular person or object in a scenario. The basic tracking can be done online using multiple third party application we typically map the areas where a person is going and used satellite to give exact location of aparticular person or object. Incidentally using of tracking was done as sport where animals where track their movements and then hunted. The alliance defines Wi-Fi as WLAN product based on the 802.11 standard. The creation of Wi-Fi has assured multiple advancement and advantage. Tracking was typically done outdoors that is in the outside world. But there is a need for indoor mapping for the malls and public places. Indoor tracking helps to determine where we are and where we want to go it is a good way to determine the constraints which will be required for a particular shopper in a mall based environment.

II. REVIEW OF RELATED LITERATURE

A. Crowed sourced map
There are multiple ways to create application where crowdsourcing can be used for mapping a particular area in the city. Using funding to create apps in a quicker manner is easier when funding& help comes from crowd.

We have seen multiple applications using crowdsourcing for quicker deployment. These applications are free but come with variety of limitations. The crowdsource map may content incomplete or wrong information it will create confusion in minds of the users. In thispaper, we aim at tackling the challenges due to incompleteobstacle information in crowd sourced indoor maps, especiallyat the initialization stage of crowd sourcing [1].

B. Milli-meter- waves massive arrays
Massive array for environmental mapping is typically used to map a singular environment based on multiple aspects. Using radar based model we can map multiple environments in a concise manner. The millimetre ways are most important to determine a specific environment based spectrum from 30 to 300GHZ. This high frequency band can be used to map the environment and produced high power weaponry. Usage of theses system are typically military and scientific based. There is introduction of the concept of apersonal mobile radar operating at millimeter-waves and consisting ofa massive array for accurate environmental mapping[2].

C. Time delay estimation in wireless networks.
Time delay can be used to effectively create and develop tracking for multilevel application. Time delay can be used infrared the state of network connection between 2 or more host. The delay can be used to measure the network load and also evaluate the available bandwidth.

The wireless latency is important to effectively construct a packet based structure. A Wi-Fi based device has a back off period before sending. The duration of this period is a combination of a randomly selected number and the duration of busy periods due to other traffic on the network.In indoor wireless localization, navigation and communications, knowledge of the poor plan is valuable side information &providesmore reliable performance.[3]
D. Exploration and Observation Planning.

Exploration and observation planning is needed for any indoor based planning. Using robots based cameras we create maps based on the multiple resolution which are seen and encountered by focusing on a view point planning for observing for a set of important regions.

Using a robot based system to first explore an environment and make a map then use this map for localizing informative religion and plan for sequence of view point from which all regions can be observed. This paper deals with an observation planning forindoor mapping. We consider the case where itmakes a map with different resolutions; it observes informative regions from near positions [4].

III.RESEARCH METHODOLOGY

A. Usage of research.

Research worst conducted on multiple technologies which could be used to deployed this project in better manner .the stack holder on this project where duly interview and the following were the requirements from the user prospective

1. Effective navigation to reach a particular place
2. To map the whole indoor structure and give the path ways
3. Creating quick access points to determine the places which can be usesvisited

These worth the specific requirement which works the areas of concern with regard to the objectives, the contents and ease the completion. The end user is the understanding of the requirements of the user and its deployment to create and generate multiple quantitative analyses

Using the generic blueprint based application we can deploy this project for a particular structure based on the tree coordinates which is X,Y,Z.Using a particular view point we can imagine and obtain the sequence of view point by which a 2D description of the seen in constructed. Mapping is important as is the input to the view point planning is depth width a 2D map is better when constructed automatically.

B. Conceptual framework

The basic conceptual framework relates to the usage and implementation of mapping which is required in indoor. There are multiple factors involved in the usage and implementation of this project. The first factor is finding the required place indoors using quantitative analysis for dependency based on environment.

In the process of implementing this project multiple factors are consider. The blueprints of the require place should be acquired to effectively position and cause no disturbance to an outside entity the relationship between these factors contribute an important analysis which is systematic in nature.

IV.SYSTEM ARCHITECTURE

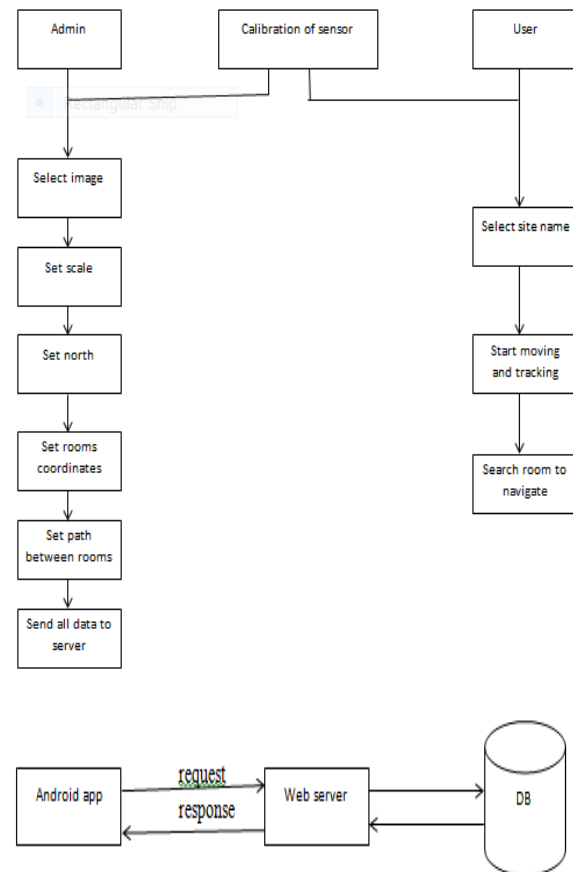**Proposed Architecture Diagram:**

Fig1: System Architecture

Fig1 shows the complete architecture of the system to be used. The architecture consists of sensor based environment mapping for recognition of multiple rooms in an effective manner.

The architecture contains the usage of android based application to map and get direction to reach to a particular room.

V. DISCUSSION

The implementation of this project will contribute to easier finding of places and quicker analysis and tracking of multiple users based. This study was undertaken to understand the usage and importance of indoor map creation. The analysis indicates creating an indoor based application for malls or any entity is important due to the vastness and the length of structure.

As an overall result the usage of application will create ease the usage of the user to make his life better. The Wi-Fi based indoor tracking will definitely help the people who are in an unknown environment. The creation of this project will also help aged an old people to navigate and reach the final destination.
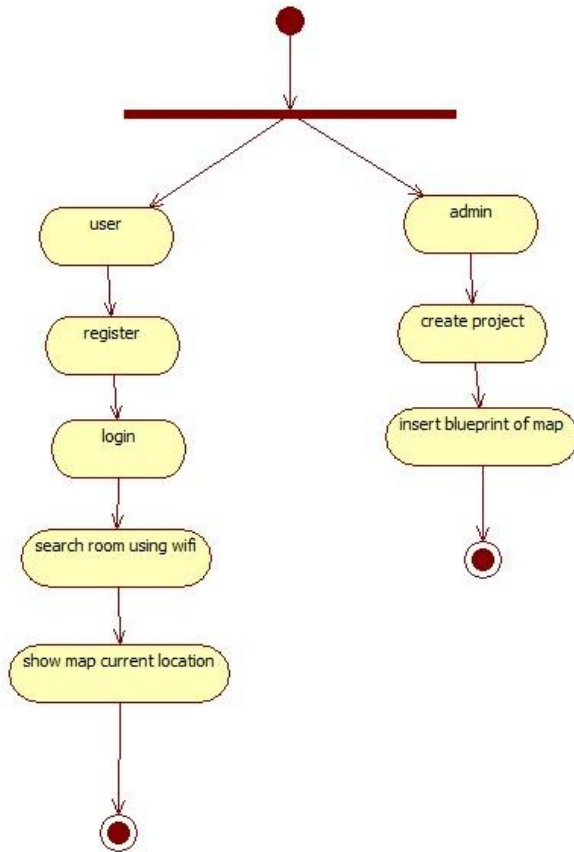
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VI. FLOW DIAGRAM

center. There is a much development in mapping indoors and we hope to introduce the same in India.

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Fig 2 shows the flow of the project. The user has to register and then login. Another side the admin creates the blueprint and sends to the server. User searches for the rooms and with the help of blueprint navigate displays.

VII. CONCLUSION

This paper describes a mapping system which combines multiple planning based models that are exploration and observation. The system first explores an unknown environment to make a map using blueprint which need to be acquired. The map is analysis to locate the informative regions where future observations are needed. The blueprint gives basic idea of that particular location and can be used to generate a specific map which can be used for navigation. We also investigate the multiple tradeoff between the planning cost and the plan quality.

The presented work is the first step toward efficient and versatile mapping and the future research possibilities. Usage of integrated mobile based indoor map is one of the most important step in indoor mapping. Indepth analysis indicates indoor mapping will be used in an aggressive way in coming future. Mapping creates a multilevel analysis who render a 2D or 3D based simulation. Indoor mapping not only the peers but alsopeople around the world. Indoor mapping represents a new age in map development constituting airports, malls, stadiums, transit