MOBILE TARGET DETECTION IN WIRELESS NETWORK

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Abstract-

This paper includes detailed information about Longitude and Latitude and how to detect mobile target in wireless network. Surveillance applications through wireless networks (WNs) where the areas to be monitored are fully accessible and the WN topology can be planned a priori to maximize application efficiency. I use an optimization framework for selecting the positions of cell phone in wireless network. By leveraging the concept of path exposure as a measure of detection quality, two problems find in this version: the minimization of the Wi-Fi router installation cost while guaranteeing a minimum exposure, and the maximization of the exposure of the least-exposed path subject to a budget on the Wi-Fi router installation cost. The main purpose of system is to locate mobile target location in wireless network. In current era many system is available for such purpose but this technique we get more efficient result. This technique is more useful for monitoring purpose.

In propose system cell phone is act as a sensor node by using Wi-Fi router it is possible to detect mobile target.

Keywords-Wireless Local Area Network, Wireless Wide Area Network, Mobile Target detection, Longitude and Latitude,

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I.INTRODUCTION

In computer networking there is a great value of wireless networking because it has no difficult installation, no more expenditure and has lot of way to save money and time. In the field of wireless networking there is another form of network which is called as Wireless Network (WN). A wireless network which is comprised on number of Wi-Fi router or access point and they are inter linked or connected with each other for performing the same function collectively or cooperatively for the purpose of sharing the internet connection and transmitting files. This type of network is called as Wireless network. Wireless network is also called Wi-Fi network. This system is use to detect location of the cell phone or location of particular person carrying such cell phone by using its longitude and latitude.

A. How to detect cell phone location in Wireless Network (WN)?

Total working of wireless network is based on its construction. In Wireless network or Wi-Fi network number of Wi-Fi router is installed. More number of Wi-Fi routers is installed then maximum area is to be covered. If the degree of Wi-Fi router is increases then maximum area is to be Wi-Fi or wireless.

A detailed and comprehensive evaluation of WNs quality is a challenging task due to the variety of applications and the difficulty to capture the realistic features of the wireless network [2].

B) Use of Longitude and Latitude for Mobile Target Detection

i**) Use of longitude:**

Longitude (shown as a vertical line) is the angular distance, in degrees, minutes, and seconds, of a point east or west of the Prime (*Greenwich*) Meridian. Lines of longitude are often referred to as meridians.

ii) Use of latitude:

Latitude (shown as a horizontal line) is the angular distance, in degrees, minutes, and seconds of a point north or south of the Equator. Lines of latitude are often referred to as parallels.

C) How Longitude and Latitude is determined?

Latitude is defined with respect to an equatorial reference plane. This plane passes through the center *C* of the sphere, and also contains the great circle representing the equator. The latitude of a point *P* on the surface is defined as the angle that a straight line, passing through both *P* and *C* , subtends with respect to the equatorial plane. If *P* is above the reference plane, the latitude is positive (or northerly); if *P* is below the reference plane, the latitude is negative (or southerly). Latitude angles can range up to +90 degrees (or 90 degrees north), and down to -90 degrees (or 90 degrees south). Latitudes of +90 and -90 degrees correspond to the north and south geographic poles on the earth, respectively.

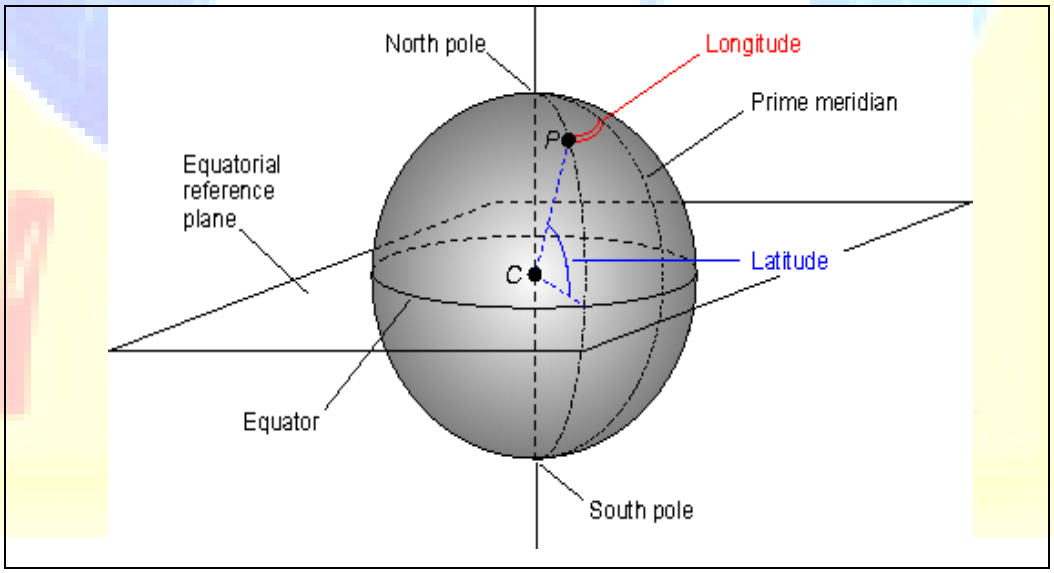

Figure I; - longitude and Latitude determination

Longitude is defined in terms of meridians, which are half-circles running from pole to pole. A reference meridian, called the prime meridian, is selected, and this forms the reference by which longitudes are defined. On the earth, the prime meridian passes through Greenwich, England; for this reason it is also called the Greenwich meridian. The

longitude of a point *P* on the surface is defined as the angle that the plane containing the meridian passing through *P* subtends with respect to the plane containing the prime meridian. If *P* is to the east of the prime meridian, the longitude is positive; if *P* is to the west of the prime meridian, the longitude is negative. Longitude angles can range up to +180 degrees (180 degrees east), and down to -180 degrees (180 degrees west). The +180 and -180 degree longitude meridians coincide directly opposite the prime meridian.

II. LITERATURE REVIEW

A complete optimization framework that enriches the proposed WN design with several additional practical aspects.

S. Meguerdichian, F.Koushanfar, M. Potkonjak, and M. Srivastava,"propose The concept of exposure has been introduced to provide a quantitative measure of mobile target traversing in a given areas of interest along a given path. Intuitively, the more exposed a path is, the better the coverage provided by the WN, and the higher the probability to detect the mobile object moving along that path. [4].

T. Clouqueur, V. Phipatanasuphorn, P. Ramanathan, and K. K. Saluja propose the concept of exposure allows the estimation of the quality of WNs for mobile target detection. So far, they have been used not only to analyze the Quality of deployed WNs, but also to define the minimum density of random networks that guarantees a given exposure level and to optimize the cost of a heuristic-based multiphase random deployment[5].

The exposure does not only depend on the location of Wi-Fi router,but also on the path followed by the mobile target traversing the area. The study of WNs coverage capabilities has recently attracted much attention in the research community. The work appearing in the field generally differentiates on the basis of the specific metric adopted to assess the coverage quality. Two coverage models are commonly adopted: a 0–1 discrete general model based on coverage ranges, and a continuous model based on the concept of exposure.

S. Meguerdichian, F. Koushanfar,G. Qu, andM. Potkonjak,propose that works resorting the 0–1 coverage model address problems of geographical coverage of continuous areas or of discrete sets of points. Within this field, study the optimal placement of routers with the goal of minimizing the number of installed devices, while ensuring

coverage of target points, and wireless connectivity among networks. A more complex version of the area coverage problem is the K-coverage problem, in which each target point must be covered by sensors, at least. A probabilistic coverage has been proposed as well. Each covered point has a detection/coverage probability that depends on the type of sensing model, as in.Unlike in these works; our optimal strategy is based on the concept of path exposure rather than on the 0–1 coverage model [15]

A recent approach to the intrusion detection problem comes from the definition of barrier coverage proposed by A. Chen, T. H. Lai, and D. Xuan. A wireless network, usually deployed over a boundary strip region, is said to provide barrier coverage if every path that completely crosses the width of the strip is covered by at least distinct Wi-Fi router, that is, it intersects at least distinct coverage areas .This is an interesting approach that brings together the 0–1 coverage (it counts the number of intersections) and the path coverage (it is not required to detect an object at every point in the area, but just at some points along its trajectory). Despite the similarities with the methodology used in this paper, the barrier coverage differentiates from the definition of exposure as it does not consider the length of the intersection with coverage areas and the distance between the path and the covering sensors [16].

Similarly to classical approaches, there are works on quality assessment, optimal regular deployment patterns, sensor density thresholds to achieve barrier coverage in Randomly deployed sensor networks, and energy-saving strategies.

III. ANALYSIS OF PROBLEM

In Mobile Target Detection in Wireless Network number of mobile/cell phone are connected with the Wi-Fi router. If the degree of Wi-Fi-router is increase then maximum area is being covered. In Mobile Target Detection in Wireless Network first create the wireless network by installing number of Wi-Fi-router. Main aim is to detect cell phone location in wireless network by using longitude and latitude of cell phone

The main issue of the propose system is the location of cell phone is determined by using longitude and latitude. Longitude is an vertical line and latitude is an horizontal line. This horizontal and vertical line touch each other at particular point that point is the

address of cell phone where the object is exist. This longitude and latitude is received from Google map. In Google map not exactly for each position the longitude and latitude and its relevant address is not stored so our system not determines exact location of mobile target. Even though wireless networks are a special type of ad hoc network

A) Why design of ad hoc network cannot be used for wireless networks?

i) The number of nodes in wireless networks is very large and has to scale to several orders of magnitude more than the ad hoc networks and thus require different and more scalable solutions.

ii) The data rate is expected to be very low in WN and is of statistical in nature. But mobile ad hoc network (MANET) is designed to carry rich multimedia data and is mainly deployed for distributed computing.

iii) A wireless network is usually deployed by a single owner but MANET is usually run by several unrelated entities.

iv) Wireless networks are data centric i.e. the queries in wireless network are addressed to nodes which have data satisfying some conditions and unique addressing is not possible as they do not have global identifiers. But MANET is node centric, with queries addressed to particular nodes specified by their unique addresses.

v) Nodes are usually deployed in wireless network once in their life time and those nodes are generally stationary except a few mobile nodes, while nodes in MANET move in an ad hoc manner.

vi) Like MANET wireless nodes are also designed for self configuration, but the difference in traffic and energy consumption require separate solutions. In comparison to ad hoc networks, sensor nodes have limited power supply and recharge of power is impractical considering the large number of nodes and the environment in which they are deployed. Therefore energy consumption in WSN is an important metric to be considered.

vii) Wireless networks are application specific. One can't have a solution that fits for all the problems.

IV.PROPOSED WORK

In Mobile Target Detection in Wireless Network number of mobile/cell phone are connected with the Wi-Fi router. If the degree of Wi-Fi-router is increases then maximize the wireless network area. In Mobile Target Detection in Wireless Network we create the wireless network by installing number of Wi-Fi router. Our Main aim is to detect cell phone exact location in wireless network whether it is moving and non-moving condition.

Currently to detect location of cell phone mobile tracker is used. Mobile tracker is completely monitored through satellite and mobile tower. In mobile tracker exact location of mobile target is detected by using SIM (Subscriber Identity Module) number and IMEI (International Mobile Equipment Identity) number.

In our system same thing of cell phone target detection can be easily located by using Longitude and Latitude.

A.Detection of cell phone target in Wireless Network (WN)

I create wireless network by installing Wi-Fi router. If maximum Wi-Fi router is increase then wireless network area is increases. Cell phone i.e. mobile target is in any corner of wireless network.

Cell phone is an android operating system based phone in which small size software is installed which is used by Wi-Fi router to detect exact location of cell phone. This software component is completely developed in android that acts as an sensor in cell phone device.

At the other side one monitoring server is used for monitoring developed in PHP (Hypertext Preprocessor) that shows location of number of sensor node i.e. cell phone device. Here we can also check whether the cell phone (Sensing node) is currently on or off. It is also possible to check cell phone on or off time of cell phone.

It is only possible because Wi-Fi router is continuously in contact with the entire sensing node. Suppose the particular sensing node is not detected /contact with Wi-Fi router then Wi-Fi router sense that currently the status of the sensor node is off and it transmit all the information such as status of cell phone, time and last location of cell phone to monitoring server if this cell phone is connected or in contact with Wi-Fi router

then again it transfer all the information such as status of cell phone, time and current location of cell phone to monitoring server.

The main purpose of propose system is to monitor all cell phone or moving target within the specific area. We also watch to particular person by using this system. All the information of cell phone is stored in database and it is easily being retrieved when required. The connected mobile can send

Message to other connected mobile. They can also send image to connected mobile. All the record of such messages and images is store on monitoring server.

B.How to detect mobile target in wireless network using Wi-Fi router.

Cell Phone is used in wireless network is android based means it based on Android operating system. Each cell phone contain small software component i.e. sensor code developed in android platform. By installing such software the cell phone is acts as a sensor node. And each sensor node means mobile target (Cell phone) is connected with Wi-Fi router .Wi-Fi router is continuously monitored to all sensor nodes and transmits all the information regarding cell phone i.e current status of cell phone whether it is on or off and current location of the cell phone, record of text messages and transfer images.

In monitoring server one monitoring window is appear. In monitoring server DHCP ip address is configured by passing pull of ip address that DHCP ip address is assign to all cell phone devices which connected to Wi-Fi router. DHCP ip address is dynamic in nature it is continuously change when cell phone is on or off. But ip address of monitoring server is static in nature it cannot change. Wi-Fi router is only work with the ip address for this purpose ip address of all cell phone connected to Wi-Fi router is required. In monitoring window all cell phone that is currently connected is display. Then select which cell phone you want to detect after selecting cell phone click on find button then all the information of cell phone like as ip address, IMEI number, and Current status of cell phone, current location of cell phone, on and off time of cell phone.

Exact location of cell phone is located from Longitude and Latitude. When the cell phone is on then it generate longitude and latitude of current position by taking the

reference of such position exact location of cell phone is detected. IMEI number is unique identification for cell phone and all the information stored and retrieved by using IMEI number. All the addresses of relevant longitude and latitude is fetches from Google map. In Google map for particular longitude and latitude its relevant address is stored. When the relevant longitude and latitude for particular position is determined from Google map then our android application send request to Google map for its relevant address.

All the information related to cell phone is stored in the monitoring server database that stores all information transfer through Wi-Fi router.

V.CONCLUSION

Conclusion of the Propose system is that to create a optimization framework to position the cell phone in Wireless Local Area Network or Wireless Wide Area Network in order to achieve high detection quality along paths traversing the area of interest. To detect a cell phone location moving along a given path in wireless network is depends on the longitude and latitude.

Main Purpose of propose system is to locate exact location of cell phone device within the wireless network and provide better result.

VI.REFERENCES

[1] I. F. Akyildiz, W. Su, Y. Sankarasubramaniam, and E. Cayirci, “A survey on wireless networks,”IEEE Commun. Mag. vol. 40, no. 8, pp.102–114, Aug. 2002.

[2] C. F. Huang and Y. C. Tseng, “The coverage problem in a wireless network,”Mobile Netw. Appl., vol. 10, no. 4, pp. 519–528, Aug. 2005.

[3] X. Wang, G. Xing, Y. Zhang, C. Lu, R. Pless, and C. Gill, “Integrated coverage And connectivity configuration in wireless sensor networks,” Trans. Sensor Netw., vol. 1, no. 1, pp. 36–72, 2005.

[4] S. Meguerdichian, F.Koushanfar, M. Potkonjak, and M. Srivastava,“Coverage Problems occoured in wireless ad-hoc sensor networks,” in Proc.IEEE INFOCOM, 2001, vol. 3, pp. 1380–1387.

[5] T. Clouqueur, V. Phipatanasuphorn, P. Ramanathan, and K. K. Saluja, "Sensor deployment strategy for detection of targets traversing a region," Mobile Netw. Appl., vol. 8, no. 4, pp. 453–461, 2003.

[6] K. Kar and S. Banerjee, "Node placement for connected coverage in sensor networks," presented at the IEEE WiOpt, 2003.

[7] Y. Zou andK. Chakrabarty, "Sensor deployment and target localization In distributed sensor network Trans. Embeding Computing System vol.3, no. 1, pp. 61–91, 2004.

[8] B. Liu and D. Towsley, "A study of the coverage of large-scale sensor networks," in Proc. IEEE MASS, 2004, pp. 475–483.

[9] P. Brass, "Bounds on coverage and target detection capabilities for models of Network mobile sensors," Trans. Sensor Netw., vol. 3, no.2, 2007, Article no. 9.

[10] F.G.Nakamura, F. P. Quintao, G. C. Menezes, andG. R.Mateus, "An optimal node scheduling for flat wireless sensor networks," Lecture Notes Comput. Sci. vol. 3420, pp. 475–482, 2005.

[11] S. Meguerdichian, F. Koushanfar,G. Qu, andM. Potkonjak, "Exposure in Wireless ad hoc sensor networks," in Proc. ACM MobiCom, 2001, pp. 139–150.

[12] S. S. Ram, D. Manjunath, S. K. Iyer, and D. Yogeshwaran, "On the path Properties of random sensor networks," IEEE Trans. Mobile Computing vol. 6, no. 5, pp. 494–506, May 2007.

[13] S. Adlakha and M. B. Srivastava, "Critical density thresholds in wireless sensor networks," in Proc. IEEE Wireless Commun. Netw., 2003, vol. 3, pp. 1615–1620.

[14] Q. Wu, N. S. V. Rao, X. Du, S. S. Iyengar, and V. K. Vaishnavi, "On efficient deployment of sensors on planar grid," Comput. Commun., vol. 30, no. 14–15, pp.2721–2734, 2007.

[15] S. Meguerdichian, F. Koushanfar,G. Qu, andM. Potkonjak, "Exposure In wireless ad hoc networks," in Proc. ACM MobiCom, 2001,pp. 139–150.

[16] A. Chen, T. H. Lai, and D. Xuan, "Measuring and guaranteeing quality of barrier-coverage in wireless networks," in Proc. ACM MobiHoc,2008, pp. 421–430.