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Localization Slant Network Accommodation in Wireless Sensor Network Using Clustering Method

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Abstract— Now a days Wireless sensor network suffers from the network partitioning. The wireless sensor network means all the nodes are mobile nodes. This means all are moving nodes. If anyone node moves during the packet transmission means the data will be lossed or attack will happen otherwise the network will be partitioned. In this paper we are performing the clustering to identify the location information of the mobile nodes. In our proposed concept we are identifying the localized nodes and un-localized nodes by using k- means clustering algorithm. The localized and un-localized nodes are identified in the basis of reply on transmission between the nodes. In the clustering operation the nodes locations are identified by the router. The two routers are performing the identification of location in our proposed system.

Keywords—Localization, localizability, network deployment, wireless ad hoc networks, sensor networks

I. INTRODUCTION

MOTIVATION FOR THE PROJECT

Localization is important in wireless sensor network. In the given network there are localized and unlocalized nodes. Using clustering operation the unlocalized nodes are identified separately and k means algorithm is applied in the unlocalized nodes. Using clustering operation the unlocalized nodes location are identified by the router. The important two routers are inter router and intra router. Here inter router act as a main and intra router act as a sub router. All the node location are stored in the inter router. Direct communication will not be taken place between the two nodes.

GOAL OF THE PROJECT

The main goal of our project is to avoid the network partition while transmission.To change the topology automatically based up on the network.

To identify the localization and unlocalized nodes.The goal of our design is to select non redundant router.

II. LITERATURE SURVEY

[1] B.D. Anderson, P.N. Belhumeur, T. Eren, D.K. Goldenberg, A.S. Morse,

W. Whiteley, and Y.R. Yang, "Graphical Properties of Easily Localizable Sensor Networks," Wireless Network.

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This paper identifies graphical properties which can ensure unique localizability and guarantees on the associated computational complexity. The dynamic tree (DT) graphical model is a popular analytical tool for image segmentation and object classification tasks. A DT is a useful model in this context because its hierarchical property enables the user to examine information in multiple scales and its flexible structure can more easily fit complex region boundaries compared to rigid quadtree structures such as tree-structured Bayesian networks.

[2] K. Whitehouse and D. Culler, "Calibration as Parameter Estimation in Sensor Networks," Proc. First ACM Int'l Workshop Wireless Sensor Networks and Applications.

A calibration-free localization algorithm for sensor actuator networks is presented in this paper. The algorithm uses sequential importance sampling to estimate the location of a number of limited-capability sensors, using the strength of the signals transmitted from the sensor node to GPS-enabled mobile actuator nodes that work as anchor nodes.

[3] David K. Goldenberg pascal bihler ming cao jia fang Brian D.O. Anderson A. Stephen morse Y. Richard yang "Detecting outlier measurements based on graph rigidity for wireless sensor network localization.

Describe a class of algorithms For fine-grained localization called sweeps. Sweeps correctly Finitely localizes all nodes in bilateration networks. Sweeps Also handles angle measurements and noisy measurements. A majority of localization approaches for wireless sensor networks rely on the measurements of internode distance. Errors are inevitable in distance measurements, and we observe that a small number of outliers can drastically degrade localization accuracy. To deal with noisy and outlier ranging results, a straightforward method, known as triangle inequality, has often been employed in previous studies.

[4] X. Wang, J. Luo, S. Li, D. Dong, and W. Cheng, "Component Based Localization in Sparse Wireless Ad Hoc and Sensor Networks," Proc. IEEE 16th Int'l Conf. Network Protocols.

Localization of persons or equipment in ad-hoc scenarios, e.g., after an earthquake still poses many challenges. The popular received signal strength (RSS) based localization methods usually cannot provide the needed accuracy especially if sensor equipment or tools are to be localized in a static environment with non line of sight conditions. On the other hand, time-of-flight (ToF) measurements have shown more accurate results but have difficulties especially if low power hardware or narrow-band wireless systems are used.

[5] D.K. Goldenberg, P. Bihler, M. Cao, J. Fang, B.D.O. Anderson, A.S. Morse, and Y.R. Yang, "Localization in

Sparse Networks Using Sweeps," Proc. 12th Ann. Int'l Conf. Mobile Computing and Networking, pp. 110-121, 2006.

We analyze the critical transmitting range for connectivity in wireless ad hoc networks. More specifically, we consider the following problem: assume n nodes, each capable of communicating with nodes within a radius of r, are randomly and uniformly distributed in a d-dimensional region with a side of length l; how large must the transmitting range r be to ensure that the resulting network is connected with high probability? First, we consider this problem for stationary networks, and we provide tight upper and lower bounds on the critical transmitting range for one-dimensional networks and nontight bounds for two and three-dimensional networks.

III. EXISTING SYSTEM

The existing system proposed localizability-aided localization (LAL) which was a fine-grained approach. The LAL is light weight method which is proposed in the existing system. The LAL identifies the localized and un-localized nodes in a network. In an existing system the un-localized nodes were formed a tree structure. The localization methods were applied to the leaf node only. Then each leaf nodes in a tree were adjusted which is used for indentifying the location of the un-localized nodes. In this network each client forwards data to the router. The adopt sufficient condition of node localizability to identify localizable and non-localizable nodes. The existing algorithms used in our projects is only try to localize as many nodes as possible. Then it does not considered the rest non-localizable nodes which are also part of the network. They are also the cost effective technology because it allows high density user in the network.

IV. PROPOSED SYSTEM

In the proposed system the locations of the un-localized nodes are identified. They are performing the clustering to identify the location information of the mobile nodes. In the clustering operation the nodes locations are identified by the router. The two routers are performing the identification of location in our proposed system. The inter router acts as a main and the intra router acts as the sub router. All the nodes location information are stored in the inter router. Here clients are not require to know their location and only need to periodically probe beacon message. In proposed system we used k-means clustering algorithm to form the cluster. Our goal is to dynamically allocate a finite number of mesh nodes to cover as many mobile clients as possible, while maintaining the connectivity between the groups of clients.

V.SYSTEM IMPLEMENTATION

A. NODE CREATION:

In the concept we form the 50 nodes. Each of which are mobile nodes and also each of which contains the mesh client. The node formation is the first step of our process. In which nodes are added in to the network. The nodes are in mobile nature. The nodes are free to move.

Identification of localized and un-localized nodes:

In the network each of which nodes contain the client. But the client does not have the knowledge of their locations.

In our proposed work we are identifying the location of the un-localized nodes in the network. Find out the localized and un-localized nodes with the help of the reply messages received by each of its neighbor So, that we are forming the cluster which is uses the k-means clustering algorithm. First of all we need to finding out the location.

B. CLUSTER FORMATION:

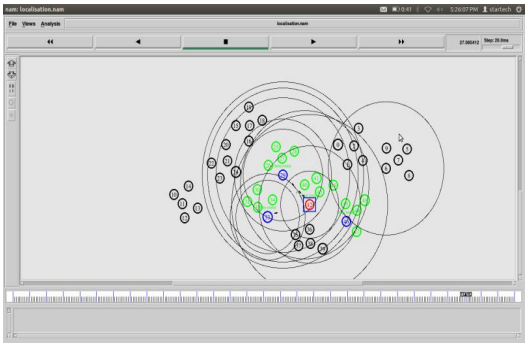
After the identification of localized and un-localized nodes we are forming the cluster. The cluster is formed in the basis of localized and un-localized nodes. The identification of un-localized node is in the basis of reply on transmission when the data packets are transferred from one node to another node in the cluster.

C. ROUTER SELECTION:

After identification of the client node location we move to the next step is that the router selection. The main aim is to reduce the network partitioning of the network. The group of cluster node wants to communicate with another group of cluster nodes with the help of inter and intra group routers in the proposed system. Before finding inter and intra router forms the cluster using the k-means routing algorithm. From that group find out inter and intra router for the scope of reducing network partitioning, we frequently changing the network topology. The number of inter group and intra groups are identified.

D. PACKET TRANSMISSION:

This is the final stage. After selection of the router and the un-localized node identification made packet transmission. Packet transmission means the inter router will inform the all node information into the intra router. The nodes in the one cluster are first communicated with the intra router. Then the intra router communicate with the inter router in the network.



VI. CONCLUSION

The mobile users need to work in dynamically formed group, which occupies different large parts and uncertain application terrain at different times in crisis management and battlefield communication. The cost effective solution is not there for such application. In our proposed system we used the network topology to seamlessly support both their intra group

and inter group communications. It provides continue network without need of high cost and coverage network.

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