www.ijecs.in
International Journal Of Engineering And Computer Science ISSN:2319-7242
Volume 4 Issue 3 March 2015, Page No. 11037-11039

Load-Balancing Based On Geographic Routing Around Connectivity Holes In Wireless Sensor Network

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Abstract: ***To detecting connectivity failure around the wireless sensor network by using Adaptive Load-Balancing Algorithm (ALBA) for find the solution to identify the localization errors. Rainbow mechanism is used to differentiate grouping sensor nodes by various colors. Both Adaptive Load-Balancing Algorithm and Rainbow mechanism (ALBA-R) are detects connectivity holes in network, a protocol for converge casting in wireless sensor networks. ALBA-R features are used in existing system for detecting localization error in the sensor network. Information can be gathered from node location; during end to end transmission of data packet loss will occur because of traffic in the transmission path. Even though connectivity failure occurred in wireless sensor network should increases the path cost of data transmission. To Propose Hole Healing algorithm to identify and heal holes in the network. The hole detection mechanism is used to solve the connection failure in between sensor nodes. The limited numbers of nodes neighboring the hole, only those nodes are involved in the process of moving and repairing the hole. Implementing Hole Healing Algorithm by using ns-2 simulation, for increasing performance by finding Localization error and solving those problems.***

Keyword —Wireless sensor networks, ALBA-R, Detecting Holes, Localization error, Hole Healing Algorithm.

Introduction

Wireless Sensor Network is mainly used for monitoring the huge environment for gathering information around the deployment area and uploaded in sink location. There are limited numbers of node that can be deployed for monitoring the location. Each and Every Sensor nodes should have fixed size and position to get data from that particular location. All nodes are connected with sink for transmitting gathered information around those areas. Finally sink can upload their data into Base Station (BS) for possible to maintaining large amount of data.

A routing protocol specified that router is connected in between two or more data links from different networks. The data packets are transmitting from one location to another location through route path. The connection failure would occur in between the routing path for sending data from source to destination. The hole should cause traffic during data transmission. It causes packet loss, so data can't be uploaded in desire time period, delay or data loss can occur.

1. Hole Detection

After identifying stuck nodes by QUADRANT rule, they will check its location information against the available boundary range. As a result the stuck nodes distinguish themselves from the boundary nodes and involve in the process of determining hole boundary.

Once a node identifies itself as a stuck node b,i, (boundary node for hole) it generates a Hole Discovery (HD) packet, includes its ID (later hole will take it as its hole ID) and forwards it to the next stuck node b i+1 , where stuck node is chosen based on Right H and Rule.

2. Node Relocation

After formative the Hole Healing Algorithm (HHA), the HM node informs about the healing process to the nodes involved in it. Nodes that receive forces from the hole center, move towards. The exponential factor controls the movement of nodes in the HHA, so that the nodes closest to the hole center will move longer distance than those on the boundary to prevent the creation of new ho les during the healing process, where the distance is inversely proportional to the force.

3. ALBA-R with HHA

Adaptive Load-Balancing Algorithm and Rainbow mechanism (ALBA-R) are detects connectivity holes in network, a protocol for convergecasting in wireless sensor networks. ALBA-R features are used in existing system for detecting localization error in the sensor network.

Hole Healing Algorithm is used for overcome that connectivity problem araised in between the network. HHA allows healing where only the nodes situated at a proper distance from the hole will be concerned in the healing process. In hole healing, the HM node which has the information about the size of the hole and boundary nodes, determine the HHA and inform nodes on their movement. HHA will also determine the number of nodes that must be repositioned to make sure a local repair of the hole

4. Updating Sink Location

Each and Every Sensor nodes should have fixed size and position to get data from that particular location. All nodes are connected with sink for transmitting gathered information around those areas. Finally sink can upload their data into Base Station (BS) for possible to maintaining large amount of data.

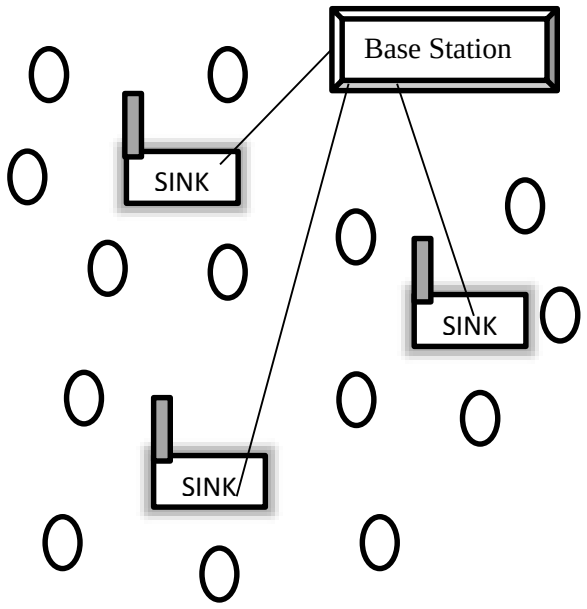

Fig.1. Uploading data to sink location

5. Performance

Performance of the proposed scheme is analyzed with the existing one and the results show that performance result provides an efficient deployment even if obstacles present in the monitoring area.

CONCLUSION

The connectivity failure problem in Wireless Sensor Network that can be detected by ALBA-R, then it should be overcome the drawbacks of error occurred in between end to end transmission. Localization error should be detected, but the problem not to be solved completely. Hole Healing Algorithm is used to identify the hole in the network, then holes can be heal due to further process.

REFERENCES

1. Chiara Petrioli, Michele Nati, Paolo Casari, Michele Zorzi, Stefano Basagni, "*ALBA-R: Load-balancing Geographic routing around Connectivity Holes in Wireless Sensor Networks*", *IEEE Transactions on Parallel and Distributed systems*, vol. 25, no. 3, March 2014.
2. A.Camill`o, M. Nati, C. Petrioli, M. Rossi, and M. Zorzi, "*IRIS: Integrated data gathering and interest dissemination system for wireless sensor networks*," Ad Hoc Networks, Special Issue on Cross-Layer Design in Ad Hoc and Sensor Networks, L. Galluccio, K. Nahrstedt, and V. R. Syrotiuk, eds., 2012.
3. D. Dubhashi, O. Haggstrom, L. Orecchia, A. Panconesi, C. Petrioli, and A. Vitaletti, "*Localized techniques for broadcasting in wireless sensor networks*," Algorithm, vol. 49, no. 4, pp. 412–446, 2007.
4. Feng Zhao, Leonidas Guibas: "*Wireless Sensor Networks - An Information Processing Approach*", Elsevier, 2004.
5. Hairong Qi, Iyengar, S., Chakrabarty, K., "*Multiresolution data integration using mobile agents in distributed sensor networks*," IEEE Transactions on Systems, Man and Cybernetics, Vol.31, No.3, pp. 383-391, Aug. 2001
6. Hairong Qi, Yingyue Xu, Xiaoling Wang, "*Mobile-Agent- Based Collaborative Signal and Information Processing in Sensor Network*s," in Proceeding of the IEEE, Vol. 91, NO. 8, pp.1172-1183, Aug. 2003
7. M. Zorzi and R. R. Rao, "*Geographic random forwarding (GeRaF) for ad hoc and sensor networks: Multihop performance*," IEEE Transactions on Mobile Computing, vol. 2, no. 4, pp. 337–348, October-December 2003.
8. M. Zorzi, "*A new contention–based MAC protocol for geographic forwarding in ad hoc and sensor*

networks," Proc. IEEE ICC, vol. 6,pp. 3481–3485, Jun. 2004.

9. P. Casari, M. Nati, C. Petrioli, and M. Zorzi, "*A detailed analytical and simulation study of geographic random forwarding*," Wireless Communications & Mobile Computing, July 21 2011, dOI:10.1002/wcm.1152.
10. Wu, Q., Rao, N.S.V., Barhen, J., etc, "*On computing mobile agent routes for data fusion in distributed sensor networks*," IEEE Transactions on Knowledge and Data Engineering, Vol.16, NO. 6, pp. 740-753, June 2004.