ISSN: 0976-3031

Available Online at http://www.recentscientific.com

International Journal of Recent Scientific Research
Vol. 8, Issue, 1, pp. 15103-15105, January, 2017

International Journal of Recent Scientific Research

Research Article

A NEW APPROACH FOR CLUSTERING IN WIRELESS SENSORS NETWORKS P- LEACH

Sukhvandna Abhi* and Umesh Sehgal

A.P, Research Schalor

ARTICLE INFO

Article History:

Received 17th October, 2016
Received in revised form 21th November, 2016
Accepted 28th December, 2016
Published online 28th January, 2017

Key Words:

Wireless sensors network; clustering; energy thresh; network life time; optimization

ABSTRACT

Wireless sensors networks (WSNs) area unit historically composed of enormous range of cheap and little same sensors nodes connected through a wireless network that gather information to be treated domestically or relayed to the sink node through multi-hop wireless transmission. Moreover, such problems area unit terribly vital due server's resources constraints like economical energy, stock limitation and lifelong of network. Many solutions were planned to reduce the traffic into network. Agglomeration algorithms are wide accustomed cut back energy consumption. During this context, the key purpose in such topology is to pick a cluster. One amongst solutions is to pick a cluster alternately. However, this alternative doesn't contemplate the energy as necessary criteria in actual papers. So as to limit energy consumption, our new methodology is planned during this paper to improvement Low Energy reconciling agglomeration Hierarchy (O- LEACH) to enhance existing LEACH and LEACH-C by choosing cluster in step with the residual energy of nodes dynamically. The simulation results show that planned rule achieves longer stability by comparison to original LEACH and LEACH-C.

INTRODUCTION

Wireless detector networks (WSNs) actor attention of researchers in numerous fields within the last decade. These networks area unit used for many applications like traffic observation, police investigation, acoustic and seismal detection, environmental observation, etc [1]. The last word objective of agglomeration is to supply an answer that keeps stability between the sensors throughout the network operation. Energy consumption is hierarchic among the key issues of analysis in distributed system together with detector Networks, the bulk of analysis has been targeted on the study protocol and algorithms that addresses these problems to resolve.

Related Works In hierarchical routing protocols whole network is divided into multiple clusters. One node in each cluster play leading rule. cluster-head is the only node that can communicate to Base station in clustering routing protocols. This significantly reduces the routing overhead of normal nodes because normal nodes have to transmit to cluster-head only. Description of some hierarchical routing protocols is discuss in next subsections. 2.1. LEACH (Low Energy Adaptive Clustering Hierarchy) In [5], Heinzelman and al. have proposed a distributed clustering algorithm called Low-Energy Adaptive Clustering Hierarchy (LEACH), for routing in homogeneous sensor networks. LEACH selects randomly the nodes cluster-heads and assigns this role to different nodes according to round- robin management policy to ensure fair energy dissipation between nodes In order to reduce the amount of information transmitted to the base station, the cluster-heads aggregate the data captured by the member nodes belonging to their own cluster, and then sends an aggregated packet to the base station.[11] The protocol consists of two phases: The first is the set-up phase, and the second is the steady-state In the first phase, cluster heads are selected and clusters are formed, and in the second phase, the data transfer to the base station is held. During the first phase, the process of electing cluster heads is triggered to select future cluster.

Multi-hop LEACH

LEACH multi hop protocols in leach protocol based on modifications to achieve for the cluster head node cannot directly communicate with the base station environment. [3] Among cluster heads by way multihop relay transmission, eventually to serve base stations.

Mobile LEACH

A mobile wireless sensor network (MWSN) can simply be defined as a wireless sensor network (WSN) in which the sensor nodes are mobile. MWSNs are a smaller, emerging field of research in contrast to their well-established predecessor. Heinzelman.W.*et.al*. present first centralized routing protocol is called centralized Leach (LEACH-C), basically LEACH using distributed cluster formation algorithm, and this protocol

Corresponding author:* ***Sukhvandna Abhi*
A.P, Research Schalor

offers no guarantee about the placement and/or number of CH nodes. Since the clusters are adaptive, obtaining a poor clustering setup during a given round will not greatly affect overall performance. [6] However, using a central control algorithm to form the clusters may produce better clusters by dispersing the CH nodes throughout the network. This is the basis for LEACH-C, a protocol that uses a centralized clustering algorithm and the same steady-state protocol as LEACH. In other way we can say LEACH has no knowledge about the CHs places. However, centralized LEACH protocol can produce better performance by distributing the CH throughout the network. During the setup phase, each node sends remaining energy and location to the BS. The BS then runs a centralized cluster formation algorithm to determine the clusters for that round. However, since this protocol requires location information for all sensors in the network, it is not robust. In simulation result show LEACH-C deliver the most data per unit energy, achieving both energy and latency efficiency. [2] A routing protocol such as LEACH and MTE does not enable local computation to reduce the amount of data that needs to be transmitted to the BS. Graph shows that LEACH-C is more efficient than LEACH. This is because the BS has global knowledge of the location and energy of all the nodes in the network, so it can produce better clusters that require less energy for data transmission.

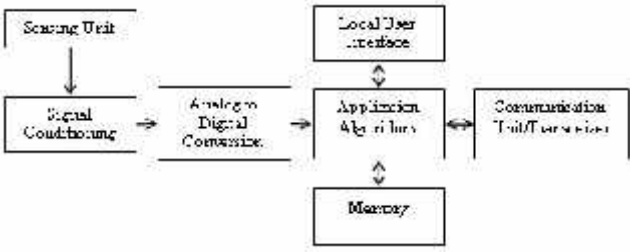

Fig 1 Wireless Sensor Network Architecture

A mobile wireless sensor network owes its name to the presence of mobile sink or sensor nodes within the network. The advantages of mobile WSN over static WSN are better energy efficiency, improved coverage, enhanced target tracking and superior channel capacity.

LEACH-C

Attack related to communication: Sink node identifies cluster heads based on its energy. After a cluster head node joins to sink node, it has to send aggregated data to sink node. A cluster head may drop packets without sending it sink node. [7] Similarly, a sensor node may join to cluster head, and may not send data to its respective cluster heads. In both cases, the data gets lost and the CH or Sink node may not be able to predict the behavior of the node. By saving energy a node gets more chance to become cluster head, in the next rounds.

To identify various attacks the sensor node has to observe its neighbor based on parameters. [1] In any routing protocol for wireless sensor network, one can observe on parameters such as : number of forwarded packets (P_{fwd}), Number of broadcast messages (P_{br}), Number of routing packets transferred (P_{rt}), Number of times the data is consistent (P_{data}), Number of times location of the node is consistent (P_{loc}), number of times the node was available (P_{av}). Among all these parameters only very few parameters are suitable for LEACH protocol. In LEACH-C protocol the communication happens only with two hops: sensor node to cluster head, cluster head to sink node or base station. Hence, the cluster node and sink node has to monitor the nodes regarding communication aspects (P_{fwd}). The cluster head should be able to identify the data stealthy attack. To identify such attacks, a cluster head has to monitor the data (P_{data}). As LEACH-C is not multihop protocol, finding route is not an issue, hence (P_{rt}) does not have much significance in LEACH-C protocol. [5] The LEACH protocol considers the location of the node based on received information from each sensor node. Hence, the observation on a parameter (P_{loc}) is also important. The availability of a node depends on the energy of the node. So the energy (P_{av}) of neighbor is monitored to check availability of nodes.

P- LEACH used techniques

P-LEACH is a cluster based prediction techniques and an improvement of LEACH to handle wireless sensor network with mobile sinks. In P-LEACH, the wireless sensor network consists of equal sized clusters called partition's clusters. A PC is a circle area of radius r around the cluster center node. [10] The other PCs in the network are formed around the first PC. They are all in the same shape that is circle of the same radius r. A sensor node in the center of each PC becomes the cluster.

A PC is a circle area with radius r and has sensor nodes deployed within the circle. Among the sensors nodes, some are used for special purposes. Every PC has one cluster center node, four partition nodes and four gate nodes. [8]All sensors have an identical r value, a length value which is used in selecting a CC node, Pns and Gns. The CC node is the sensor node located in the center of a PC, four Pns are located on the border line of the PC circle, and four Gns play the role of both delivering data collected from the sensor nodes and monitoring the presence of a mobile sink.

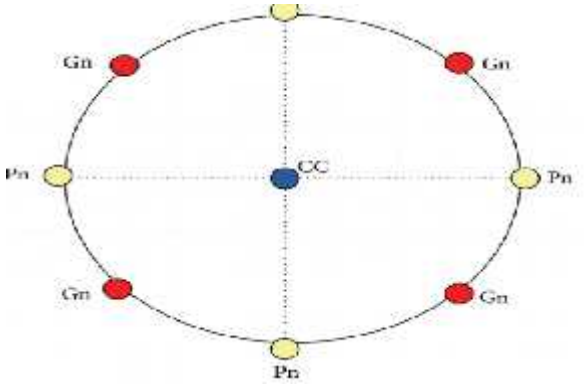

Fig 2 Structure of a PC

Sensor nodes:- Sensor nodes are to collect data in the field deployed. They also participate in selecting candidates for CC, Pn and Gn. At the initial installation, every sensor node has a sensor ID with an r value and a P value. The ID of a sensor node is made up with the group ID that identifies all the sensors deployed and a serial number (SN).r-value represent the circle radius of PC and is used in selecting candidates for Pn. P value is the hypotenuse of a right angled triangle and is used to determine four Pns [12].

Cluster center and selection of Pn: - CC is a sensor node selected only to construct a PC structure. [3] A candidate CC

becomes a temporary CC (TCC).The sensor that has the least SN number (A, 1) is selected as TCC.

Communication Quadrangle:- When a mobile sink is detected through one of four Gns, the Gn changes its state to work from sleep and continues tracking. [4] If the distance between the Gn and the mobile sink goes over Mp (moving point),the Gn goes to deep sleep mode after transferring all tracking information to a Gn in the ready state.

Comparison between LEACH

1. Data Transmission
2. Mobile sink tracking
3. Reinstallation of new sensors

CONCLUSION

The past few years have attracted a lot of attention on clustering method for wireless sensor networks and introduced unique challenges compared to traditional method in wired networks. In this paper, the energy efficient clustering algorithm for wireless sensors network has been introduced. Detailed simulations of wireless sensors network environment demonstrate that our approach is a good candidate to increase the period of stability of network, and has the ability of extending the life span of the whole network. From our point of view O-LEACH will work in dynamic networks as well as in static networks. In this paper we evaluated O-LEACH only on static networks. This protocol should be tested on dynamic networks as well. We analyzed existing sink tracking techniques in wireless sensor networks with mobile sink and proposed a new efficient techniques called P-LEACH. The result in energy efficiency of sensor nodes, reduced registration time of new nodes, and saved battery life of managing sensors by distributing their roles.

References

1. S. ELkhediri, N. Nasri, A. Kachouri, Diverses ”Synchronization Issues in Wireless Sensors Networks”, IEEE The 23 *International Conference of Microelectronics*. TUNISIA: ICM, 2011.
2. J. Elson, K.Rmer:”A New Regime for Time Synchronization”. ACM Computer Communication Review (CCR) 33(1), 149-154 (2003)
3. N. Sepideh, N. Aras, A. Fairouz” SLTP: Scalable Lightweight Time Synchronization Protocol for Wireless Sensor Network”, Springer-Verlag Berlin Heidelberg 2007.
4. S. Elkhediri, N. Nejah, A, Wei, Abdennaceur KA,” Survey of Synchronization Algorithms: Wireless Sensors Networks Case Study,” The Second International Conference on Communications and Information Technology (ICCIT). Hmmamet, Tunisia, 2012.
5. W. R. Heinzelman, and H. Balakrishnan,” An application specific protocol architecture for wireless microsensors networks”, IEEE transaction on Wireless Communication, 2002.
6. K. Baydoun, V. Fela and H. Guyennet, ”Energy-Efficient WSN Infrastructure”, DCSN’08, IEEE Int. Workshop on Distributed Collaborative Sensor Networks. 2008.
7. K. Beydoun Phd. thesis:” Conception d’un protocole de routage hierarchique pour les reseaux de capteurs,” L’U.F.R des sciences et techniques de l’universit de FRANCHE-COMTE, 2009.
8. M.Bani. Yassein, A.Al-zoubi Y. Khamayseh and W. Mardini” Improvement on LEACH Protocol of Wireless Sensor Network (VLEACH)”, *International Journal of Digital Content Technology and its Applications.* 2009.
9. M. Aslam, N. Javaid, A. Rahim, U. Nazir, A. Bibi and Z. A. Khan ”Survey of Extended LEACH-Based Clustering Routing Protocols for Wireless Sensor Networks”, arXiv:1207.2609v1 [cs.NI], 2012.
10. P. T Bhuvaneswari, and V. V aidehi” Enhancement technique incorporated in LEACH a survey”, *indian Journal of science and technology*. ISSN: 0974-6846: 2009.
11. K. Baydoun,V. Fela and H. Guyennet ”Wireless Sensor Network Infrastructure: Construction and Evaluation”, ICWMC?09, IEEE Int. Conf. on Wireless and Mobile Communications, 2009. 12. N. Shigei, H. Miyajima, H. Morishta, and M. Maeda ”Centralized and Distributed Clustering Methods for Energy Efficient Wireless Sensor Networks”, Proceedings of the International MultiConference of Engineers and Computer Scientists. Hong Kong: 2009.
12. W.R. Heinzelman, A.P. Chandrakasan and H. Balakrishnan ”Energy-Efficient Communication Protocol for Wireless Micro sensor Networks”, Proceedings of the 33rd Hawaii International Conference on System Sciences - 2000

****

How to cite this article:

Sukhvandna Abhi and Umesh Sehgal.2017, A New Approach For Clustering In Wireless Sensors Networks P- Leach. *Int J Recent Sci Res.* 8(1), pp. 15103-15105.