

The Survey: On Clustering Technique in Wireless Sensor Networks

Sonia Sethi¹, Deepak Kumar²

¹M Tech Scholar SSCET Badhani,

²Assistant Professor SSCET Badhani,

¹Purnima79sethi@gmail.com, ²deepak_642@yahoo.co.in

Abstract

In wireless sensor networks energy consumption of the sensor nodes is directly related to the lifetime of the network and to conserve the battery of the sensor node different techniques are developed called clustering protocols, each protocol designed have its own advantage but also have some deficiency in improving the life time of network. This paper gives the survey study of all the clustering protocols used in wireless sensor networks.

Keywords: Wireless Sensor Network, clustering, LEACH

1. Introduction

Wireless sensor networks consist of a large and huge number of small tiny, cheap, computational, and energy-constrained devices called sensor nodes that are deployed and set in network service area of wireless, it is easy to add and move sensor nodes set/deployed/mounted nodes for better coverage and their reach. There are two main functions in a Wireless Sensor Network, sensing and relaying data. The first sensing component of a node is responsible for probing their environment to track a stimuli/target. The sensed sets of data are then relayed to the gateway. The use of WSNs is increasing day by day and at the same time it faces the same problem of power energy constraints in terms of limited battery lifetime in area network. As each node depends on power for its activities, this becomes a major issue in wireless sensor networks. The failure of one node due to energy loss can interrupt the entire system or application. This paper gives the survey study of all the clustering protocols used in wireless sensor networks.

2. Literature Survey

[1] Jaswant Singh Raghuwanshi, Neelesh Gupta, Neetu Sharma,.In this paper reclustering and multihop data transmission processes are utilized for data reporting to base station by sensor node. The accurate use of energy in WSNs is the main challenge for exploiting the network to the full extent. The main aim of the proposed method is that by evenly distributing the energy all over the sensor nodes and by reducing the total energy dissipation, the lifetime of the network is enhanced, so that the node will remain alive for longer times inside the cluster. A new threshold has been formulated for cluster head selection which is based on the remaining energy of the sensor node and the distance from base station.

[2] Chunyao FU et al, focused that due to the drawback of nodes energy, energy efficiency has a significant issue that should be consider while the protocols are designed in WSNs. LEACH Protocol plays a main part as a distinctive representative of the network hierarchical

routing protocols. In response to the irregular energy distribution that has been caused by the uncertainty of data cluster heads forming. A novel improved type algorithm of called LEACH protocol (LEACH-TLCH) which has been implemented/proposed to balance the power energy consumption of the whole area network and expand the life of the area network.

[3] Yang Jing et al., concentrated that LEACH has a good solution for energy efficiency as a representative routing algorithm of hierarchy for WSNs. Although, LEACH has few disadvantages such as complex formation of clustering and direct packet communication between all the given clusters heads as well as sink node to transmit high energy power consumption. An improve and modified routing network algorithm based on the LEACH called ILEACH has been proposed. Firstly, the ILEACH protocol employ the power residual energy to the formation of clustering which can avoid the low level energy node to become a network cluster head. Secondly, an energy parameter function has been proposed in the method to balance the energy power consumption among cluster heads. Lastly, a data type aggregation tree has been constructed to transmit the data packet from the network cluster heads to sink node.

[4] Zahra Beiranvand et al., discussed that a large amount of power energy in data nodes of a WSN has been consumed due to the inner-area network communications. An energy with efficient routing type algorithm has been give/proposed which save a major part of inner-network communications energy. The proposed routing type algorithm selects data sensor nodes among higher power residual energy, the more neighbours with lower order distance from the given Base Station (BS) as the Cluster Head (CH) nodes. After that it will manages data sensor nodes properly and constructs area clusters to wide/maximize the WSN total lifetime and to minimize the average power energy dissipation for each sensor node.

[5] Yi Liu et al., proposed a low energy uneven cluster protocol design. It Aim at the random selection for cluster area head of traditional type Leach protocol, and the fault of the single hop from the entire cluster heads to the area sink node, an improved method for Leach protocol has advanced. Initially, the different election model of cluster area head has improved and the node data residual energy has been considered in the method of threshold and the cluster area head election to increase/improve the whole network area life cycle. In the multi-hop route, choose the maximum power energy and the first nearest node as the first next hop and a area route transfer packet data among many different clusters has been formed.

[6] Muhammad Haneef et al., presents that limited and less energy resource type is the major limitation related with WSN. A communication link is the main cause of power energy reduction in the area network so its designing of battery energy efficient area routing algorithm is the key and main challenges that have to address for extending lifetime of network. It has taken deploy redundant nodes into explanation which covers major part of energy reduction in the area network. It presents the energy type efficient routing algorithm which is based on the structure of LEACH. A lot of redundant and duplicate data packet is available in WSN due to usually deployed nodes. The redundancy of deployed nodes data can be used as an improvement for increase network lifetime.

[7] Brar and Malhotra represented that wireless network has witness an explosion of the concern from any consumers in latest years for its applications in mobile and personal communications. Wireless networks are an essential component of the current communication infrastructure and energy type efficiency has a main design concern due to the less and limited power battery life of given mobile terminal. Generally, power conservation used techniques are usually used in the very hardware design of such different systems. As the network type interface has an important consumer of different power, a lot of network research has been considered to low-power energy design of the full network type protocol stack of wireless

networks in an effort which to improve energy power efficiency. A complete summary of current work the addressing power energy efficient and with low-power type design within its all layers of the wireless network has been presented and moreover, the guideline for energy conservation have provided.

3. Problem Definition

The problem in these techniques discussed above is that the nodes used in the network do not have any recharging concept, if the node is choosed as Cluster head and is receiving data from other cluster heads during this process there can be the possibility that this node will dead which failures the whole network. So a rechargeable node called gateway node concept will solve this problem.

3. Conclusion

This paper gives the survey study of all the clustering protocols used in wireless sensor networks and how there protocols are improving the lifetime of network using multi-hop, gateway and forwarder node concepts.

Acknowledgments

The about contents and research method we used is true to my knowledge and the result at every step we concluded is according to my research work.

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