Review On Grid Wireless Sensor Energy Reduction Approaches

Deepak Bisht
Universal Institute of Engg. & Tech., IKG PTU Jalandhar
deepakbisht5249@gmail.com

Er. Aayushi Chadha
Universal Institute of Engg. & Tech., IKG PTU Jalandhar
aayushichadha.237@gmail.com

Abstract: Sensor nodes have limited battery power with limited lifetime, then ultimately increase the survival time of network. During data sensing the battery of sensor nodes cannot be change in the sensor network areas reduce the energy consumption of nodes by finding the centrality of nodes then find the high centrality of nodes as a cluster head. Balance the energy and distance by bacterial for optimization method.

Keywords: Grid, Sensor, WSN, Optimization.

I. INTRODUCTION

In research world Wireless Sensor Network (WSN) is rapidly growing and now days for research scholar this is an emerging area. In environmental applications like earthquake information, animal tracking, weather information etc. WSNs are used. WSN are also used in business applications, hospitality, Military applications, security, and Military application. WSN is the collection of tiny sensor nodes equipped with limited storage space, data gathering, integrated sensing and processing ability. Every tiny node has limited battery power which is used to sense the data from the sensing areas. For the wireless sensor network the basic requirement is reduce the total energy consumption of the sensor nodes, while sensor nodes have limited battery power with limited lifetime, then ultimately increase the survival time of network. During data sensing the battery of sensor nodes cannot be change in the sensor network areas [1]. In various fields from commercial and industrial to military areas WSNs are used. Economically these have ability to communicate via constrained memory and computing power. For computations by energy consumption the lifetime of node and network are directly influenced. With the nodes using hop-distance connectivity comprising of wireless communication links the data is transmitted towards the base station, in an insecure communication medium they communicate and they often operate unattended, where in a secure manner the data need to be sent. In wireless sensor networks, the pairwise key process provides the basic security services. A public key cryptography uses key encryption algorithm which is typically a low-power domain in which cryptanalysis is used to extract information for the secure transmission. Cryptographic algorithms can be classified as symmetric or asymmetric. For key distribution, the nodes are deterministic in the network, and network uses clustering technique for secure communication. The all nodes in a cluster maintain different keys, but every node uses same key for different communications with the base station [2]. A wireless sensor network (WSN) has the ability of communicating, sensing and computing and is a group of spatially scattered hundreds or thousands sensor nodes. In physical spaces it embedded; from the environment continuously gather a big amount of data. Thereafter in many domains such as monitoring, scientific investigations, tracking and more WSN is beneficial technology. With a certain topology in an area any WSN incorporate several sinks or single, several or single sources and many sensor nodes are organized. Such as humidity sensor, pressure sensor, sound sensor, temperature sensor, etc. the sensor nodes can contain different. From the environment that item bedded in When this sensor nodes sense elements, data by using the processing units inside the sensor nodes through the analogue to digital converter module the analogue signal is converted in to digital, after that for processing the data is send to the base station. To the base station Wireless sensor node can communicate directly and also it can communicate with each other.

To accommodate the limited memory storage in WSN the amount of data to be permanently stored into a data warehouse should be reduced by a certain summarization algorithm. Also the node power is very important and because of the small size of the nodes. By using more efficient routing algorithm while it is more practical to save the power and extend the life time of the network. Organizing objects into groups whose members are similar in some way clustering is the process. In the same cluster by the CH the data is collected and aggregated, and then to the base station it is transported. To communicate with the base station the cluster head is the only cluster node that is permitted. The congestion of the network and the total used energy will be minimized by this [3]. In the life cycle of WSNs there are three phases, relocation phase, deployment phase and working phase. In the beginning, initial sensor phase is deployed in sensors then the hole healing and hole detection is covered. This phase is also

known as the SD (Sensor Deployment) problem. After the phase deployment, it works in the target field sensors collaborates to form coverage.

Due to the energy depletion or technical problems if any sensor is down the other sensor will fill in. To avoid coverage holes the WSN will enter in the relocation phase. In the relocation phase, in search for a redundant sensor that can take over its task any sensor in need of assistance will send request messages (if the sensor is down, its neighbouring sensors will do the job). That is to say, in this phase two problems are to be addressed, a redundant sensor is locating by one and for the redundant sensor to move to the requesting place the other is planning a path. The entire task is known as the SR (Sensor Relocation) problem. To resume its surveillance task the network returns to the working phase after sensor relocation. In working phase the network needs to be enter and in the requesting place the relocation phase alternately from time to time until it cannot locate any redundant sensor that can fill [4]. In digital electronics, wireless communications and in sensor technology the rapid advance made it possible to develop multi-functional small sensor nodes, low power and low cost sensor nodes, which can transmitting data as well and capable of gathering and processing the data. Over a large harsh field a great number of small sensor nodes comprises by a wireless sensor network (WSN). Via wireless communication further web them together to gather data. Such as applications intelligent transport monitoring, target tracking, environmental and habitat monitoring and object detection WSNs can be employed [5].

II. LITERATURE REVIEW

Abdul Wahid Ali et.al. [1] for WSN to improve the lifetime of the network a Grid Based Clustering with Spanning Tree Routing (GCSTR) approach is proposed. To the sink all CHs are reported, along specific path i.e. edges of spanning tree. Before constructing the spanning tree over CHs, the number of inter transmission and intra transmission are evaluated and then the lifetime of the network is calculated. As compared to LEACH and OCR the simulation result vigorously effect on the lifetime of network. With respect to energy consumption simulation has been done; lifetime of the network over the packets transmits and number of rounds to the sink.

Manjunath CR et.al. [2] In this paper, the key management comprises of two phases: firstly, for mutual communication node between the nodes establishing pairwise link keys and secondly, for the nodes providing certificates. For symmetric key encryption and for a common secret keya secure Public key Cryptography based solution is derived. This approach is used for the resource utilization and scalability of WSN. Behind the proposed scheme there is a simple concept, to provide a form of different security the security analysis has proven. In the future work to provide higher security for sensor nodes in massive the certificate can be extending by changing the content in such way.

Manal Abdullah et. al.[3]based on of density grid based clustering for wireless sensor networks WSNs a new clustering method is proposed in this paper. The network area is divided into grids which are classified as high dense and low dense according to the number of nodes in the cluster empty grids. To form clusters these grids are combined where empty girds are excluded, in the cluster two adjacent high dense grids are joined, in the cluster two adjacent low dense grid and high dense grid are also joined, and in a cluster two adjacent low dense grids will become as outlier. An appropriate cluster head is determined, as normal nodes and advance nodes cluster nodes are distributed where from the advance nodes with minimum distance to base station the cluster head initially chosen. Based on highest energy the cluster head will be elected.

Chien-Fu Cheng et. al. [4] in mobile WSNs the SR problem is revisit in this study. By cascaded movement to faulty sensors and coverage holes the proposed algorithm moves the redundant sensors. In the planning of cascading schedule it is also considers the estimated value of network lifetime. Overall, there are following features of the proposed SR algorithm: longer network lifetime, shorter moving distances, shorter response time and smaller number of requesting places. In all these aspects the performance evaluation done in this research has confirmed its superior performances.

Yung-Kuei Chiang et.al. [5] for grid-based WSNs a Cycle-Based Data Aggregation Scheme is proposed in this paper. By partitioning first construct the grid infrastructure and whole field into a grid of cells to achieve this goal. By a simple arithmetic operation each node is determined which cell it belongs. The cyclic chain formation is easy and its maintenance is also not high. The energy depletion distribute evenly, in each cell the node with most residual energy is chosen to be the cell head. The aggregated data is forwarded of its own cell by only cell head to the leader of cyclic chain. Also to transmit the aggregated data to the BS finally the cell heads on the cyclic chain take turns to be cycle leader.

SrikanthJannu et.al.[6] by considering the energy efficiency of the WSN the hot spot problem and present grid based clustering and routing algorithms are addressed in this paper. With various scenarios of WSN the algorithms are tested and in terms of the number of dead sensor nodes, energy consumption and network life time the proposed algorithms perform better than the existing ones by the experimental result.

SrikanthJannu et.al.[7]for clustering and routing problems in WSNs a distributed grid based algorithm called GFTCRA is presented in this paper. In a distributed way for runtime management of the faulty cluster an efficient mechanism is also presented. In the routing path without creating any loop the routing algorithm is designed in such a way that it can cope up the sudden failure. Than the two fault tolerant clustering algorithms namely GBR and LPGCRA in terms of number of dead sensor nodes, average energy consumption and in term of network lifetime shown through the experimental results.

Abdul Waheed Khan et.al. [8] to minimize the routes reconstruction cost of the sensor nodes while maintaining nearly optimal routes to the latest location of the mobile sink a Virtual Grid based Dynamic Routes Adjustment (VGDRA) scheme is proposed in this paper. A set of the communication rules are proposed that the routes reconstruction process thereby requiring only a limited number of nodes to re-adjust their data delivery routes towards the mobile sink.

XiaoliangMeng et.al. [9]the GBRR routing protocol is presented in this paper, in WSN which addresses the issue of the reliability of node-to-node link quality. An energy-efficient technique is utilized; to create virtual grid-based clusters around the next hop nodes of the selected routes the strategy uses the common route reply strategy. To maximize the utilization of the greedy and perimeter forwarding, while at the point of data transfer ensuring reliable node-to-node links. Ineffective hops the strategy is able to transmit data to the BS it showed by the simulation result, because to the select the nodes in the region that exhibit the highest forwarding values the strategy is designed.

Manoj Pant et.al.[10] based On EEBCDA a multi-hop routing protocol is proposed in this paper. As on EEBCDA it divides the sensors network into unequal grid in such way that grid that is away from the sink has more number and larger size of sensor nodes.CH is performed in each grid rotation. CH collects data after the formation for next hop data transmission and to its next level neighbor grid. The amount of energy utilization is significantly reduced by this approach and hence the network lifetime is increased. The process involved for the finding of the next hop to enhance the network lifetime, in making the grid and cluster formation can be further contrive.

Author Name	Year	Technology Used	Description
Abdul Wahid Ali et.al.	2016	Grid based cluster	for WSN to improve the lifetime of the network a Grid Based Clustering with Spanning Tree Routing (GCSTR) approach is proposed. To the sink all CHs are reported, along specific path i.e. edges of spanning tree. Before constructing the spanning tree over CHs, the number of inter transmission and intra transmission are evaluated and then the lifetime of the network is calculated.
Manjunath CR et.al	2015	Hybrid secure scheme	In this paper, the key management comprises of two phases: firstly, for mutual communication node between the nodes establishing pairwise link keys and secondly, for the nodes providing certificates. For symmetric key encryption and for a common secret keya secure Public key Cryptography based solution is derived.
Manal Abdullah et. al.	2015	Density Grid-Based Clustering	Based on of density grid based clustering for wireless sensor networks WSNs a new clustering method is proposed in this paper. The network area is divided into grids which are classified as high dense and low dense according to the number of nodes in the cluster empty grids. To form clusters these grids are combined where empty girds are excluded, in the cluster two adjacent high dense grids are joined, in the cluster two adjacent low dense grid and high dense grid are also joined, and in a cluster two adjacent low dense grids will become as outlier.
Chien-Fu Cheng et. al.	2015	Energy-balanced and timely self-relocation algorithm	in mobile WSNs the SR problem is revisit in this study. By cascaded movement to faulty sensors and coverage holes the proposed algorithm moves the redundant sensors. In the planning of cascading schedule it is also considers the estimated value of network lifetime.
Yung-Kuei Chiang et.al.	2014	Cycle-based data aggregation scheme	for grid-based WSNs a Cycle-Based Data Aggregation Scheme is proposed in this paper. By partitioning first construct the grid infrastructure and whole field into a grid of cells to achieve this goal. By a simple arithmetic operation each node is determined which cell it belongs. The cyclic chain formation is easy and its maintenance is also not high. The energy depletion distribute evenly, in each cell the node with most residual energy is chosen to be the cell head.
SrikanthJannu et.al.	2014	Energy efficient grid based clustering and routing algorithms	by considering the energy efficiency of the WSN the hot spot problem and present grid based clustering and routing algorithms are addressed in this paper. With various scenarios of WSN the algorithms are tested and in terms of the number of dead sensor nodes, energy consumption and network life time the proposed algorithms perform better than the existing ones by the experimental result.

SrikanthJannu et.al.	2016	A grid based clustering and routing algorithm	for clustering and routing problems in WSNs a distributed grid based algorithm called GFTCRA is presented in this paper. In a distributed way for runtime management of the faulty cluster an efficient mechanism is also presented. In the routing path without creating any loop the routing algorithm is designed in such a way that it can cope up the sudden failure.
Abdul Waheed Khan et.al.	2015	a virtual grid-based dynamic routes adjustment scheme	to minimize the routes reconstruction cost of the sensor nodes while maintaining nearly optimal routes to the latest location of the mobile sink a Virtual Grid based Dynamic Routes Adjustment (VGDRA) scheme is proposed in this paper.
XiaoliangMeng et.al.	2016	grid-based reliable routing protocol	the GBRR routing protocol is presented in this paper, in WSN which addresses the issue of the reliability of node-to-node link quality. An energy-efficient technique is utilized; to create virtual grid-based clusters around the next hop nodes of the selected routes the strategy uses the common route reply strategy.
Manoj Pant et.al.	2015	grid clustering	based On EEBCDA a multi-hop routing protocol is proposed in this paper. As on EEBCDA it divides the sensors network into unequal grid in such way that grid that is away from the sink has more number and larger size of sensor nodes.CH is performed in each grid rotation. CH collects data after the formation for next hop data transmission and to its next level neighbor grid.

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