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Uniform Deployment of Sensor and Density Based Cluster Head Selection Protocol for WSN

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ABSTRACT: Progress and progress in the wireless communication made it possible to wireless sensor networks (WSN) to develop the data processing as an important platform in the new few years appeared. In WSN is battery is the only source for the supply of energy to the sensor nodes; which in the different environmental work. WSN consumes a lot of energy for the detection, processing, storage and communicate the data with the bathtub. In such methods groups head (CH) sends data directly to sump or via relay node. It guarantees a uniform distribution of CHs and fixed number of groups, all nodes. The proposed method is used to select the following hops to specific properties is based. Since only CH rotated, there is no energy consumption for the group update. Because sensor nodes sensitive data and works in the hostile unattended environment it must be protected against attacks. But security in the sensor networks, the major challenges for the data processing and resource constraints. This also included position of paper-based intrusion detection method to the sensor nodes from the non-authorized attack and node compromise to protect. Simulation result shows that our uniform deployment and density based energy efficient clustering head protocol (UDDEECH) is Energy-saving and secure communication can make available.

KEYWORDS: WSN, energy consumption, grid-based approach, cluster-based method, intrusion detection system

I.INTRODUCTION

Different protocols and methodologies are developed up to now to mitigate the energy consumption of the traditional decentralised system is different. The different group that is based protocol [2] for hierarchical network, are proposed by many researchers and scholars. Here sensor nodes to the various groups submit your requested data to a node belong to your group grouped, the group header (CH) was called and then collects the received data and forward it to the data sink. The group-based approach has the ability to network durability and stability by improvement in energy efficiency and energy consumption among the nodes in the network life time balances. You will be in relation to the techniques classified for the prefixes of group heads and the transfer of the accumulated data for the bath or on the BS [3] will be accepted.

Here in this paper, the network will be divided in to the grid and CH per each grid selects, so it works with any node in this grid can understand. This approach guarantees a uniform distribution of CHs and the fixed number of the group to make all nodes comprehensively. To view the performance capability of the network to improve, CHs based on energy and distance selected. The proposed solution selects the following hops to specific properties is based: the energy level of the CH-submitter, distance between the CH-submitter and the hops, the distance between the CH-submitter and BS. He uses multihop data transfer and a suitable number of following hops for the transfer of the data from each CH tub.

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Another important feature is that there is no group update there; only CHs, turned at the end of each round. This can energy consumption for the group update will be saved. Since communication success is only achieved if the data is safe and in the right form are we a position-based approach in order to identify the nodes and unauthorized access to the network may be compromised. Consequently bonds of this paper to the watchful eye toward energy efficiency with security.

This paper is organised as follows: Section II describes related work to this work and motivated. Section III describes suggested that energy-saving method and section IV Algorithm of UDDEECH. In Section V, we evaluate our proposed method and the simulation results shown. Section VI closes the paper with future improvements.

II.RELATED WORK

Some of the group-based hierarchical protocols are researched and taught over to the power of WSN have been proposed to improve. W. Heinzelman et al.; proposed liquor [4] One of the earliest protocols hierarchical grouping together was developed to increase the life of the network to increase. Here are CHs to BS in connection and the not group head node uses CHs as between nodes, to BS.

LEACH with a factor of mobility called LEACH-M [11] introduced by D.S. Kim, et al; consider mobility of nodes during the communication with the liquor exceeds. It caused many packet losses during CH-motion, before you create a new CH for the next round of primaries. HPAR [12] proposed by Q. Li, et al.; is conscious way dialing protocol of the energy that the clustered zones formatted and then decides how to releases on other zones hierarchically for the maximisation of net life time laid.

SEECH, Mehdi Tarhani et al. [17] introduced selects CHs and relay separately. This method differs from most of the protocols in which high-level energy nodes as a group header can be selected and you rotation in round each changed. Although CH and relay separately is preselected, energy limitation exists yet, since the number of following hops from each CH to decrease maximum two and is therefore not in the large networks is applicable.

For the performance of the existing route selection mechanism to improve and to overcome, we propose a new method for selecting the various parameters of the CHs, and data transmission path in order to decrease. In order to make it fit in the long-distance communication, appropriate numbers of hops based on energy of the CH-submitter, energy of CH-receiver distance from the CHi to CHj and distance from CH to BS preselected. Also we will add an additional functionality, the intruders determined the unauthorized access on the network. It uses a simple methodology that only a small amount of memory and computer capacity requires.

III.ENERGY-EFFICIENT ROUTING IN UDDEECH

Wireless sensor nodes for the detection and the collection of information is battery operated, are used in the areas in which there is very little leeway there to manually change batteries or the load. It seems very difficult to frequently change batteries or recharge while it, uninterrupted human effort, time and cost. Sensor nodes that the data of the used environment collect, follow in the direction of the pan for the further processing and analysis. There is a very large area of research if you matching route selection/communication mechanism in WSN introduces because their function according to the nature of the network structure and the nature of the application depends on. For improving the performance, the functionality and the lifetime of WSN, we need the life time of each sensor node increase by we look at its energy consumption.

The proposed method attempts to the energy efficiency of WSN to improve by grid-based approach with group-based approach combined. Here is the power to come in to the grid is divided and Cluster Head (CH)per each grid selects as illustrated in the Fig.1 i.e., the transmission model of UDDEECH.

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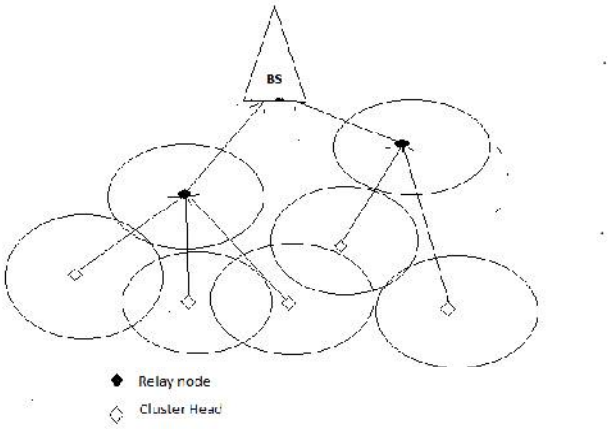

Fig.1. Transmission model in UDDEECH

IV. PROPOSED ALGORITHM

For the operation of UDDEECH is shown in Fig.1. This is repeated each round different phases have regularly, as follows:
Network is virtually in 4 zones separately. Each node generates a random probability (P) on the product to calculate the introduction of order and the threshold value T (N). New node control the energy of all nodes. The node, the maximum energy in the previous round, select as marginal (Relay node) and check the minimum distance from the BS. After that the energy of the new node in the previous round is not relay node is equal and minimum distance of BS off, select as CZH (Group zone head) after the completion of the zone selection procedure, each member sends its data and residual energy to CZH. The CZH retains residual energy information of all Member node and send it to marg. The Relay node sends BS maximum residual energy value of the node to its our group belonging, if the last frame of round completes. BS find the maximum residual energy of the network and send this value to all CZH-nodes in the network. Further ZH-node will send the maximum value to all network nodes. Exclusive node defense of the value of the maximum residual energy for the following competition of T (N) and the current round is completed.

V. SIMULATION AND RESULTS

In the wireless sensor network monitoring field, large number of nodes are being deployed randomly. So, the significant energy dissipation of nodes will occur, as the data flow in the network is considerably large. The aggregation of data is required in addition, if the similar types of data may be found in the closely located nodes . Due to some other factors of the nodes in the network the energy consumptions of nodes is different from node to node due to locations. Also the network environment is assumed to be homogeneous in nature as mentioned in the related work described in the above protocols. But in real it is not possible to have system homogenous .Even after one single transmission the whole system become heterogeneous .So to understand the work of previous work done we take system with random deployment of nodes in the given 100 x 100 field under observation.

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Case I: Node – 100 , Area -100 x 100

In this case we deploy 100 nodes are non-uniformly in SEECH and then they are deploy uniformly inthe 100 m X 100 m area. As shown in Figure 2

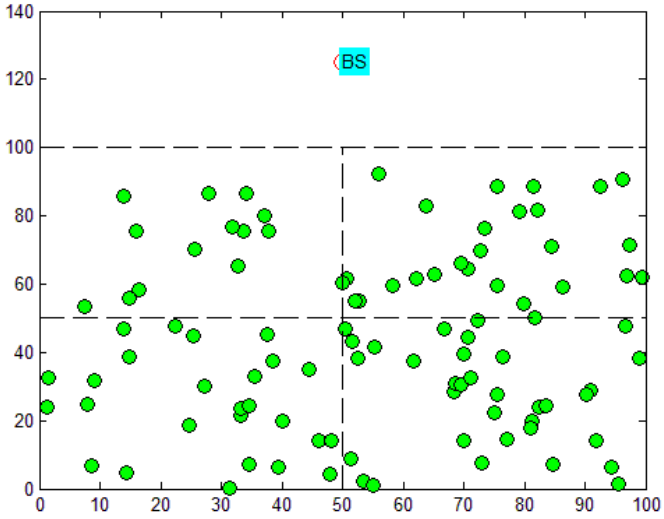

Fig.2 Non Uniform deployment 100 Nodes, Area (100,100)

In Fig.3 uniform deployment it is studied that the nodes are at equal distance and nodes are at equal coverage of the nodes and hence here is less loose of energy due equal transmission from nodes to Base station is less than non-uniform deployment .here also the density of nodes area also uniform .

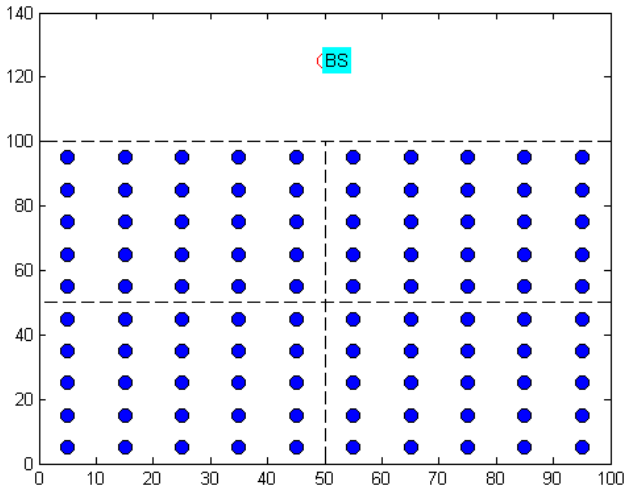

Fig.3Uniform Deployment of nodes with Zone Division in UDDEECH

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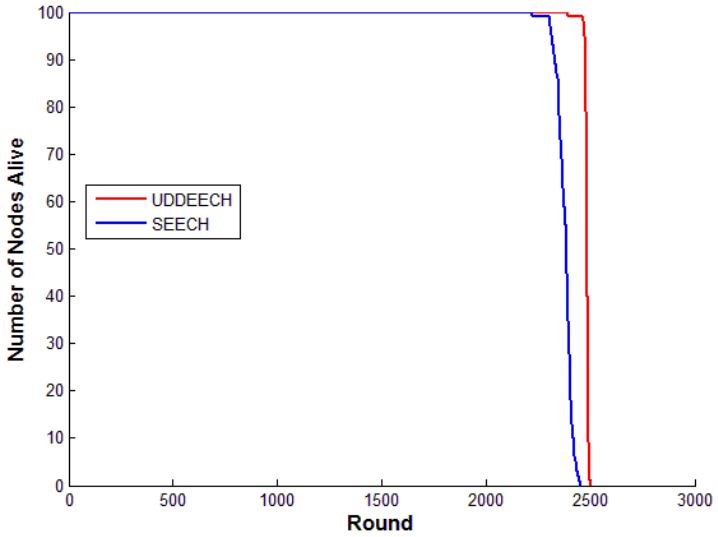

Fig.4 Nodes 100 Number of nodes Alive per Round in SEECH vs. UDDEECH

In Fig.4and Fig.5 graph it is observe that all the of nodes dead around 2491 but in case of its more then 2506 .so from their is it studied that it is also from simulation clear that the death of nodes occur not in long period but in very small periods so UDDEECH have more life time then SEECH .

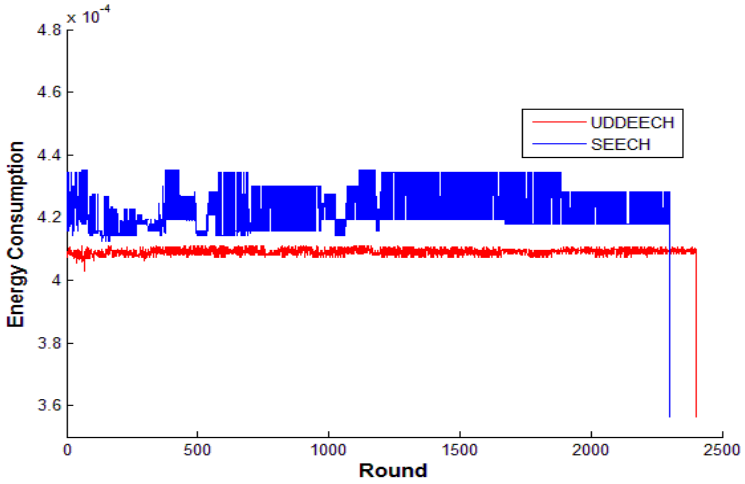

Fig. 5Nodes 100 Energy Consumed per round in SEECH vs. UDDEECH

Table.1. Parameters

Parameters	Values
Number of nodes	100
Channel Type	Channel/Wireless Channel
Initial Energy	50
Packet size	128bits/packet

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VI CONCLUSION ANDFUTUREWORK

This paper is mainly focused on how to improve the energy efficiency of WSN to increase the life of the network to increase. The proposed method uses mesh-based approach with group-based strategy. To achieve the objective by CH prefixes, is based on two parameters: Energy and distance. You also considers energy of the CH-transmitter and receiver, the distance between the CH and the hops, distance between CH and sump to the selected path in the BS. In order to make them more energy-efficient, we just to be rotated before CH and no change in the grid as soon as it is formed. The paper also specifies position-based method to match incoming nodes and attacker to identify. Simulation results in successful implementation of the shows our proposed method and performance evaluation says that our method of energy efficiency with lower energy consumption can achieve.

As future work more attacking scenario (sip hole attack, worm infestation, etc.) other than CH-attack. Here we considered only CH-attack no attacks in other sensor nodes assuming. We can also improve this method by methods included, in order to treat node failure by way we support and provide alternate

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