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# A Review on M-Gear and Leach Protocol in WSN

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***Abstract:*** **- the maximization of network lifetime of a multiple-sources and single-sink derived globally optimal solutions with sharp upper bounds on the actual Networks lifetime in some planar network examples with consideration of the physical, MAC and network layer protocols. Given approach provide an analytical framework for the relaxed network lifetime maximization problem of a WSN in planar topology. Network Survivability is a critical problem in sensor networks. The clustered method can enhance the efficient utilization of the limited energy resources of the deployed sensor nodes. In this paper we study about the existing work of leach protocol and make an objective to solve the problem.**

***Keyword:*** **wireless sensor network, m-gear protocol, leach protocol, neural network**

## I. INTRODUCTION

The WSNs are networks of computing devices; they are considerably different from traditional networks. Traditional wireless networks use limited network range, security, reliability and also have storage and bandwidth constraint. The first difference of WSNs compared to traditional data networks is that they have severe energy, computation, storage and bandwidth constraints. The second difference of WSNs compared to traditional data networks is their overall usage scenario and the implications which it brings to the traffic and interaction with the users. Typically, in traditional networks, users are connected to a node (or group of SNs) and require a service from another node. Another structural characteristic of WSNs is the choice of communication mode, i.e., single hop versus multi-hop [1]. For example, the network may be designed in such fashion that the SNs in each cluster either use single hop, or multi-hops to reach the CH or BS. The optimum choice of communication depends on the radio energy model. The network may consists of a single type of SNs (homogeneous network), or it may consist of multiple types of SNs with different functionality (heterogeneous network). Since cheap SNs are expected to be manufactured in bulk quantities, node reliability is another important factor that should be taken into account for dimensioning the networks.

## II. CHARACTERISTICS

The development of wireless sensor networks was inspired by military applications like surveillance in war zones. WSN is an emerging technology currently being deployed in seismic monitoring, Wild life studies, manufacturing and performance monitoring. In such scenarios the SNs are densely deployed in a predetermined geographical area to self-organize in to Adhoc wireless networks together and aggregate data [2]. Such networks typically contain a large number of the densely deployed SNs which function as a wireless peer-to-peer network. They use multi-hop and cluster based routing algorithms. The main characteristics of a WSN include:

- Power consumption constrains for nodes using batteries or energy harvesting
- Ability to cope with node failures
- Mobility of nodes
- Communication failures
- Heterogeneity of nodes
- Scalability to large scale of deployment
- Ability to withstand harsh environmental conditions
- Ease of use.

## III. LITRETURE SURVEY

At first Direct Transmission to BS was talked about [3]. Hub specifically sends the detected information to BS. This methodology is secure yet prompts higher force utilization. Hubs which are found more incredible than the hubs which are found closer to the BS. To defeat this issue least transmission vitality (MTE) was produced [4]. In MTE the information is transmitted utilizing different bounces. This again climbed a comparative issue, the main contrast is that presently the hubs which are closer to BS started to kick the bucket prior. Estrinet. al [5, 6] chipped away at a progressive grouping component managing a symmetric correspondence for power sparing in sensor hubs. As per this component, every single taking part hub of system are appropriated in 2-jump group. In spite of the fact that this convention is definitely not much vitality effective for remote sensor hubs nonetheless, it offers approach to various leveled bunching calculations.

Grouping for vitality protection is demonstrated as effective system for remote sensor systems [7, 8]. At the point when a sensor system is conveyed, hubs build up groups and name one hub from every bunch as a bunch head. These bunch head hubs are in charge of getting information from different hubs of bunch, do information collection/combination of got information and transmit it to base station. The information transmission from sensor hubs in a bunch to group leader of that bunch is done utilizing TDMA. Every Node sits tight for now is the ideal time opening to send the information to bunch head. Along these lines, transfer speed utilization and life time of system is upgraded [9]. Considering bunch based calculations, today a few conventions are produced, each having a few characteristics and upgrades principally in group head choice calculations. Despite the fact that one thing is normal, all conventions concentrate on vitality protection and information conglomeration. Primary method of choosing a bunch head was given by LEACH and that is further upgraded by SEP and DEEC. This article harps on near investigation of two such Drain based directing conventions for effective vitality utilization.

Jamal N. Al-Karaki et al. in [1] highlighted the advantages and performances issues of the routing technique with the help of a survey and pinpoint future research direction in wireless sensor networks. Initially the design challenges for routing protocols in WSNs are discussed. Furthermore, the design trade-offs between energy and communication overhead savings in every routing paradigm is reviewed in this paper.

Kyounghwa Lee et al. in [2] tried to improve the performance of clustering with Distance and Density based Cluster Head Selection (DDCHS) algorithm. Evaluation parameters used for the performance are communication cost and energy consumption, obtained results shows that DDCHS algorithm has improves the network lifetime about 50% better than LEACH and about 10 % better than hybridenergy efficient distributed (HEED) protocol.

In order to extend the lifetime of network in [10] all nodes are divided into fixed clusters and members of cluster nodes adaptively join cluster according to the distance from the cluster head. MATLAB is used for simulation and results prove that the improved routing protocol is effective to issue of non-uniform energy consumption in nodes which is due to random cluster head selection strategy in LEACH.

Sang H. Kang et al. in [11] investigated the energy depletion of a node as a CH node and a non-CH node and suggest a distributed CH selection algorithm LEACH-DT that takes into account the distances from sensors to a base station that optimally balances the energy consumption among the sensors. NS-2 simulations results show that given scheme outperforms 10 % over the original LEACH with improved network lifespan.

In [12] author tried to overcome the problem of coverage hole and energy hole by introducing density controlled uniform distribution of nodes in different segments of network and fixing optimum number of Cluster Heads (CHs) in each round that helps to achieve balanced load distribution. Moreover technique is verified by the MATLAB Simulations result which proves that the given scheme enhances stable period and network life time.

## IV. MOTIVATION

LEACH give birth too many protocols. The procedures of this protocol are compact and well coped with homogeneous sensor environment. According to this protocol, for every round, new cluster head is elected and hence new cluster formation is required. This leads to unnecessary routing overhead resulting in excessive use of limited energy. If a cluster head has not utilized much of its energy during previous round, than there is probability that some low energy node may replace it as a cluster head in next cluster head election process.

There is a need to limit change of cluster heads at every round considering residual energy of existing cluster head. Hence an efficient cluster head replacement algorithm is required to conserve energy. In clustering protocols as LEACH, nodes use same amplification energy to transmit data regarding of gap in two point like transmitter and receiver. To save energy, we should also follow a good transmission method that describe required modified energy for transmission with cluster head of a cluster or we can say its a base station. As discussed this example, communicate a packet to cluster head at this time level of a power is same as define in application which is needed by the power level as needed in farthest end of network to base station outputs in wastage of energy. One beat resolving can be having high level information of network and then nodes final the level for amplification of signal. Puting and measuring distances of a network which use full of topology that needs lot of routing and so, this method do not use for low energy consumption.

To provide a solution of above mentioned issue, we need to propose two methods i.e. efficient cluster head replacement and dual transmitting power levels.

## V. OBJECTIVE

To develop modified leach, our primary objectives of this project work are summarized asfollows:

1. Develop a simulated environment of WSN having configurable parameters.
2. To study previous routing protocols and their features.
3. Investigation in Energy efficient routing algorithm with an application of optimizing WSN.
4. To create modified Leach (MODLEACH) from Leach on MATLAB for optimizing its various parameters.
5. To conduct a comparative performance evaluation for network lifetime, dead Nodes, alive Nodes, packets send to base station, packets send to cluster head and throughput.

## VI. CONCLUSION

Our work is based on LEACH protocol that can be extended to improved version of LEACH. Basically, we introduce two techniques to raise network life time and throughput. To understand our proposed scheme, we have to understand mechanism given by LEACH. This protocol changes the cluster head at every round and once a cluster head is formed, it will not get another chance for next 1/p rounds. For every round, cluster heads are replaced and whole cluster formation process is undertaken. We, in this work, modify LEACH by introducing efficient cluster head replacement scheme. It is a threshold in cluster head formation for very next round. If existing cluster has not spent much energy during its tenure and has more energy than required threshold, it will remain cluster head for the next round as well.

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