

# Nature Magnificent technique in Wireless Sensor Network to overcome the Energy Utilization

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**Abstract** - A wireless sensor network is a network consisting of spatially distributed autonomous devices using sensors to monitor physical or environmental conditions. A WSN system incorporates a gateway that provides wireless connectivity back to the wired world and distributed nodes. The main issue in wireless network is that if any node in the network runs out of energy and goes dead; its replacement is very difficult task. So our main goal is to design an algorithm using which it's avoided the low energy nodes to not take part in forwarding the route request messages to find a route to destination node. Ant Colony optimization is the algorithm which is used in the proposed scheme to trace the path for the route request message. In the proposed work; there is alternative broadcasting of data in between the cells of the nodes and no node can take part in the Route Request forwarding message if their energy is less than the average energy.

**Key Words:** WSN, Clustering, Broadcasting, Network Lifetime, Route Request,

## 1. INTRODUCTION

A wireless sensor network is a remote network consisting of spatially distributed autonomous devices using sensors to monitor physical or environmental conditions. Wireless Sensor Network have increased overall consideration as of late because of the advances made in remote correspondence, data advances and hardware field. The WSN is built of "nodes" – from a few to several hundreds or even thousands, where each node is connected to one sensor. We must use the clustering concept in the wireless sensor network for grouping of nodes and use ant colony optimization.

## 1.1 WSN ENERGY ISSUES

The WSN is subjected to different asset requirements. Vitality is of prime concern, since it is extremely obliged at sensor hubs and it is not doable to either supplant or revive the batteries of sensor hubs that are frequently conveyed in threatening environment. If Less vitality nodes take part in route request phase it may affect the broadcasting. One another problem is that nodes consume high energy power during broadcasting. Ant colony optimization algorithm overcomes these problems with the help of clustering concept of nodes.

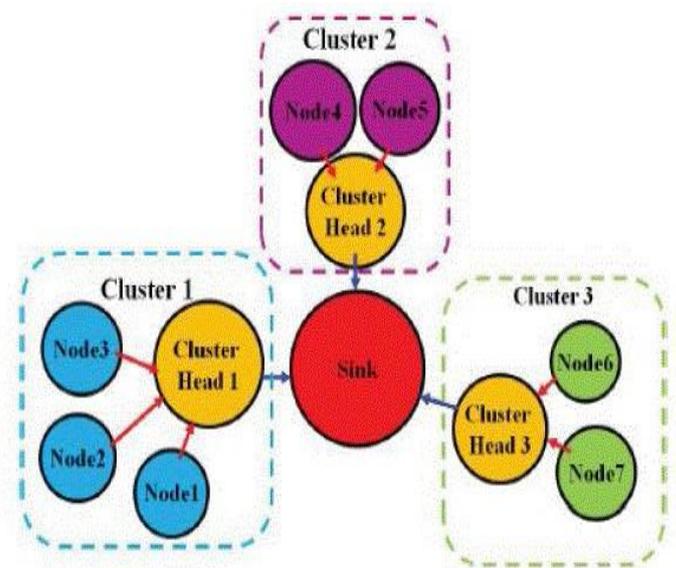


Figure 1: Clustering in WSN

## 2. LITERATURE SURVEY

**Riham and Mustufa 2014 [16]** proposed vitality mindful bunch head choice utilizing LEACH and PSO are actualized in the remote sensor systems. The choice of a group head utilizing PSO minimizes the intra group separation between bunch head and the group part, and the streamlining of vitality administration of the system. From the reproduction results, it is seen that Vitality mindful Optimal bunch head determination utilizing PSO approach builds the system lifetime of the bunch in such a route by lessening the aggregate vitality utilization than Drain usage. Vitality mindful bunch head choice utilizing LEACH and PSO are actualized in the remote sensor systems. The choice of a group head utilizing PSO minimizes the intra group separation between bunch head and the group part, and the streamlining of vitality administration of the system. From the reproduction results, it is seen that Vitality mindful Optimal bunch head determination utilizing PSO approach builds the system lifetime of the bunch in such a route by lessening the aggregate vitality utilization than Drain usage.

**M.Natarajan 2013 [17]** proposed proper organization of nodes becomes one of the major techniques to expand the life span of the whole network through aggregating data at the cluster head(CH).LEACH (Low Energy Adaptive Clustering Hierarchy) and PSO (Particle Swarm Optimization) are applied for producing energy-aware clusters with optimal selection of cluster head. The determination of a group head utilizing PSO minimizes the intra cluster separation between group head and the cluster part, and the improvement of vitality administration of the system. From the recreation results, it is seen that Vitality mindful Optimal cluster head choice utilizing PSO approach builds the system lifetime of the group in such a route by diminishing the aggregate vitality utilization than Drain execution.

**M Karthikeyan and Dr. K. V enkatalakshmi 2012[18]** PSO joined cuckoo burn streamlining algorithm for bunching in vitality mindful way and thought about it with cuckoo burn calculation. The unpleasant proficient bunching of WSN we are lessening the aggregate correspondence separation as well as giving more likelihood to higher vitality hub to be bunch head. The proposed algorithm gives progressed lifetime than LEACH, SEP and cuckoo burn algorithm.

**Xia Li et al., 2013 [19]** proposed technique in which they joins the enhanced molecule swarm grouping calculation with the between bunch directing calculation to shape an versatile vitality proficient grouping directing convention, alluded to as AECP. Reenactment results demonstrate that this convention not just adjusts the vitality utilization of the general system, postpones the demise time of the hubs, additionally gives more dependable information conveyance.

**Abdo et al., 2014 [20]** proposed improvement in leach protocol using a novel algorithm to select cluster heads with highest and balanced energy in wireless sensor networks and choose the cluster heads with highest energy. Cluster head collect the data and send it to base station without considering security. Here RSA algorithm is used to secure the packets during send to both cluster head and base station.

**Agam et al., 2014 [21]** proposed the self knowledge technique in which SCHP (sub cluster head protocol is used to reduce delay occurs in link stability problem in SCHP. Each node knows about its neighbors by using its self knowledge. Receiver will send its receiving capacity and sender will send data according to that capacity. So link becomes more stable. In Self knowledge technique sender keeps the information regarding its one hop neighbors. All important parameters like delay, threshold, packet size, energy are considered before sending data to the next node.

### 3. RESULTS

In proposed work, there are clustering of nodes and we use the ant colony optimization technique for broadcasting. Following are the screenshots of the related work:-

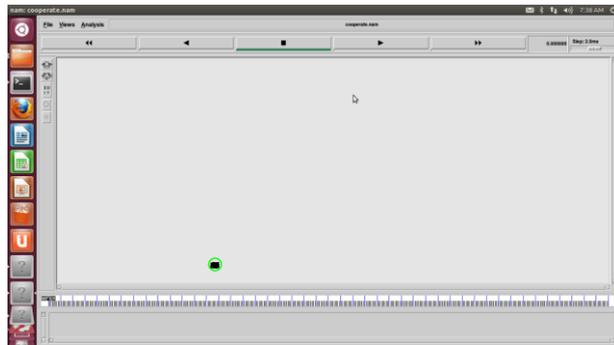


Figure 2: Source Node

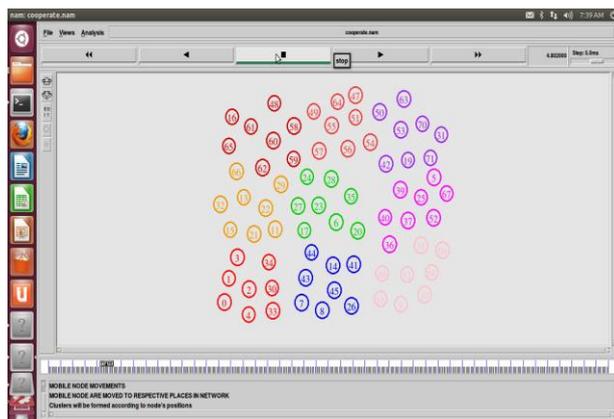


Figure 3: Clustering of Nodes

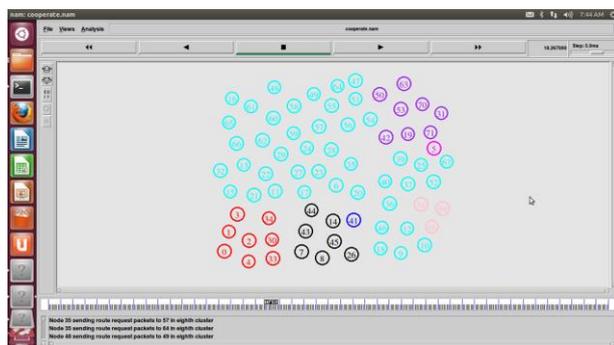


Figure 4: Broadcasting

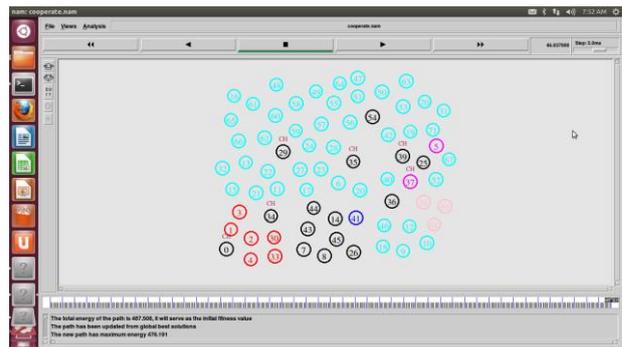


Figure 5: Path from Source to Destination

### 4. CONCLUSION

Clustering is one of the popular approaches considered in wireless sensor network to achieve energy efficiency and prolong the lifetime of the network. This study focuses on the same, i.e. using clustering in the wireless sensor network by dividing the network into grids having equal number of nodes. However, after the clusters have been formed the task to select the best path from source to destination is given prime importance. The proposed scheme improves the path finding criteria by using modified approach for broadcasting of request packets. The methodology has been implemented on NS2.35 which is open source simulator. The performance of the scheme has been analyzed on the basis of delay, throughput and energy consumption in the network.

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