



# International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 2, February 2016

## Intensifying Lifespan of WSN Using VCH Selection

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**ABSTRACT:** In wireless sensor network, it is important to reduce energy dissipation and prolong network lifetime. The data collected by each sensor is communicated through the network to a single processing center that uses all reported data to determine characteristics of the environment or detect an event. The communication or message passing process must be design to conserve the limited energy resources of the sensor. Clustering sensor into groups, so that sensor communicate information only to cluster head and then cluster head communicate the aggregated information to the processing center, may save energy. Therefore optimal cluster head selection is important to maximize the lifetime of the network by utilizing the limited energy in an efficient manner. various algorithms are proposed for the selection of cluster head for maximizing the network lifetime. In this project we have study and compare various protocols used for cluster head selection in WSN also proposed and advanced algorithm for cluster head selection for increasing lifespan of wireless sensor network.

**KEYWORDS:** energy efficient; routing protocol; sink node ;virtual cluster head; wireless sensor network.

### I.INTRODUCTION

In most wireless sensor network (WSN) application the entire network must have the ability to operate unattended in harsh environments in which pure human access and monitoring cannot be easily scheduled or efficiently managed or it is even not feasible at all. Based on this critical expectation, in the area of interest by relatively uncontrolled means and they form a network in an ad hoc manner. Moreover, considering the entire area that has to be covered, the short duration of the battery energy of the sensors and the possibility of having damaged nodes during deployment, large populations of sensors are expected, it's a natural possibility that hundreds or even thousands of sensor nodes will be involved. In addition, sensors in such environments are energy constrained and their batteries usually cannot be recharged. Therefore, it is obvious that's specialize energy aware routing and data gathering protocols offering high scalability should be applied in order that network lifetime is reserved acceptably high in such a environments. Naturally, grouping sensor nodes into clusters has been widely adopted by the research community to satisfy the above scalability objective and generally achieve high energy efficiency and prolong network lifetime in large scale WSNs environments. The corresponding hierarchical routing and data gathering protocols imply cluster based organization of the sensor nodes in order that data fusion and aggregation are possible, thus leading to significant energy savings. In the hierarchical networks structure each cluster has a leader, which is also called the cluster head and usually perform the special task referred above, and several common sensor nodes as members. The cluster formation process eventually leads to a two level hierarchy where the CH nodes from the higher level and the cluster member nodes from the lower level. The sensor nodes periodically transmit their data to the corresponding CH node because the CH nodes send all the time data to higher distance than the common nodes; they naturally spend energy at higher rates. A common solution in order balanced the energy consumption among all the network nodes is to periodically re-elect new CHs in each cluster. Thus basic aim of this project is to proposed and advanced algorithm to select cluster head and thus to design the wireless sensor network in such a way that is should consumed less energy in-tern increase the lifetime science there is a indirect relation between energy consumption and lifetime of wireless sensor network. So to propose an advanced algorithm for cluster head selection for increasing lifespan of WSNs is the basic aim of this project.

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## II. RELATED WORK CONCEPT

To maximize network lifetime in Wireless Sensor Networks (WSNs) the paths for data transfer are selected in such a way that the total energy consumed along the path is minimized. To support high scalability and superior data aggregation, sensor nodes are obtained grouped into disjoint, non overlapping subset, group of nodes called clusters. Clusters generate hierarchical WSNs which incorporate capable utilization of limited resources of sensor nodes and thus extends network lifetime the objective of is to come different cluster head selection algorithms reported in the literature of WSNs. This review of different energy efficient cluster head selection algorithm in WSNs, presents timeline and description of LEACH and its limitations in WSNs.

Development in electronics and wireless communication has improved of low energy and low cost wireless sensor networks. Wireless sensor networks are combination of autonomous device transmitting locally gathered to so called sink node by using multiple hop wireless. One of the most important challenges in WSNs is to design energy efficient routing mechanism to increase the network life time due to the limited energy capacity of the network nodes. Additionally hot spots in WSNs emerge as locations under heavy traffic load. Nodes in such areas quickly exhaust energy resources, leading to disconnection in network services. Cluster based routing algorithm in WSNs have recently gained more interest, demand and energy efficiency is of selective interest. A cluster head respects all nodes in the cluster and collect data values from them to balance the energy consumption and the traffic load in the network, the CH should be reused among all nodes and the cluster size should be carefully determined at different part of the WSNs. In proposed research the virtual concept is used for the formation of cluster head assistance which will be helpful for the lifespan of network and for communication between cluster head through different cluster head with the base station according to efficient energy

## III. IMPLEMENTATION SCREENSHOTS

### Modules Description:

Module 1: Packet transfer using Euclidean's Distance Algorithms.

In this module, communication and packet transfer between different nodes is done without forming cluster by using Euclidean's Distance Algorithm.

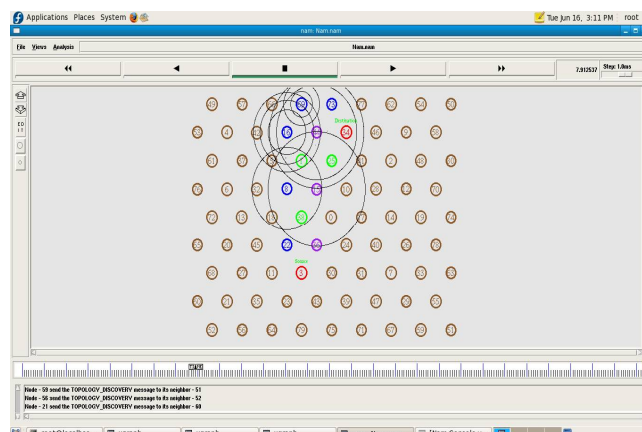


Figure:1- screenshot of packet transfer using Euclidean's distance algorithm.

Module 2: Packet transfer by Selecting Cluster Head.

In this, communication and packet transfer between different nodes as same as LEACH protocol by selecting cluster head and using sink node.

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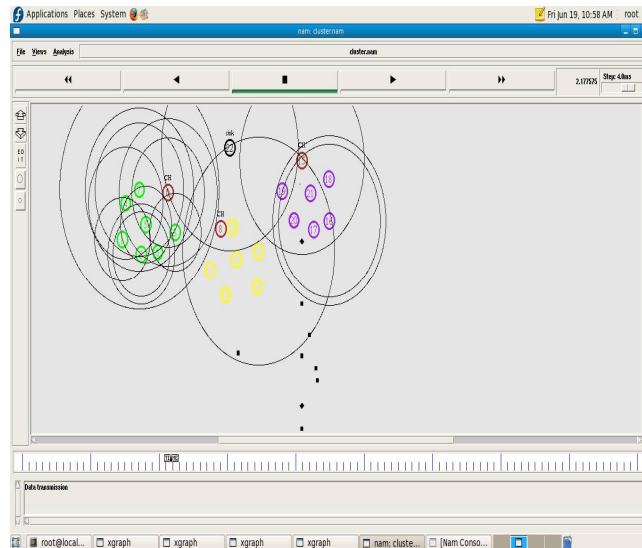


Figure:2 -Screenshot of packet transfer by Selecting Cluster Head.

Module 3: Packet transfer using VCH selection algorithm, and performance analysis.

In this, communication and packet transfer between different nodes is done by using VCH in single and multiple clusters out of any number of clusters. (single and multiple random VCH formation based WSNs and performance and comparative analysis, performance analysis of each WSN scenario with the consideration parameters) comparative analysis of LEACH and VCHF technique.

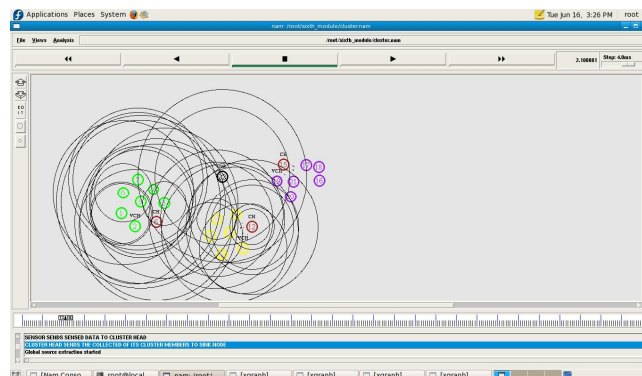


Figure:3 -Screenshot of packet transfer using VCH and performance analysis.

## IV. ADVANTAGES

1. Cluster head selection procedure Complexity is reduced by using virtual Cluster Head.
2. Our system increase lifespan of the wireless sensor network.
3. Time complexity is reduced.
- 4.

## V. RESULT

Thus, the VCHF is capable of reducing energy consumption in the sensor network, thereby increasing the lifetime of the sensor network.



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## VI. CONCLUSION

The simulation results obtained from the presented model, we conclude that, energy consumption, which is a major factor affecting a performance of the wireless sensor networks, has reduce drastically by using a Virtual Cluster Head Formation (VCHF) Algorithm as selection of the CH in a second is reduce its complexity. Also, energy consumption has direct impact on the lifetime of the sensor network. By reducing energy consumption, we will able to increase the lifetime of the sensor network.

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