Improved Mod leach By Using More Energetic Cluster Head Selection Technique

[1]Nisha Singh, [2]Shyna Mahajan
[1,2]Dept. of Computer Application, SSGI, Amritsar, Punjab, India

Abstract
In wireless sensor the clustering technique of any cluster head basically effects stability of a network and also makes that particular protocol more efficient. Many of the cluster head techniques in cluster protocol like MODLEACH is mainly based on the probability and threshold but does not affect the network life if used. This paper, mainly focused on the energy efficient in the multi-hop technique of clustering approach in MOLEACH, where the cluster heads are selected on the basis of the remaining energy of sensor nodes and probability parameters. It increases the stability time of the network because cluster head needs more energy than normal nodes.

Keywords
WSN, MODLEACH, cluster heads, Residual energy.

I. Introduction

As the wireless area network have wide range of applications, so it is more challenging to design a protocol according to the network field. A wireless sensor is mainly made up of of tiny sensor nodes with certain limited initial energy. Each node depends on energy for its activities being performed; which has become a major issue in field of wireless sensor networks and at the same time it also faces the problem of energy constraints which is identified in the terms of limited battery lifetime for data transfer. The clustering is the mechanism that helps in improving the data transfer rate in a network by using different intraclustering technique and inter-clustering techniques.

The modified version of LEACH is MODLEACH protocol which has different uses in wireless sensor network. According to MODLEACH protocol, at each single round, a new cluster head is selected and according to which new cluster formation is required. The cluster head selection of any clustering technique in Wireless sensor networks effects stability of a network and also makes that particular protocol more efficient. An energy efficient multi-hop of clustering approach in MOLEACH, where cluster heads are selected on the basis of remaining energy of sensor nodes and probability parameters. The node having the maximum energy will get more chance to act as a Cluster head. It increases the stability period of the network because cluster head needs more energy than normal nodes.

II. Related Work

The paper —Enhancing MODLEACH technique of clustering using multihop cluster heads as forwarder nodes presents the enhanced technique to improve the network life on the basis of time. The paper uses intra-clustering and inter-clustering method in data transfer mode or network signals to enhance the MODLEACH.

The working method used in this paper is mainly depends on thethe forward node the step by step work used in this paper is as [1-2]:

- Firstly the, Implementation of MODLEACH clustering Protocol is initially done .
- After the implementation of MODLEACH,data transformation is done and the data transformation mode which depends on inter-clustering between CHs to sink, CHs to CHs nodes and CH to CH as the forward node [2].
- The selection of CHs is based on probability of the node and the life of CH remains. The CH may changes according to energy and rounds done for completion process, after this data collection is to be done from neighbour nodes.
- When the data is collected from neighbour nodes CHs examine the sink and sends data to certain upward CH nodes based on distance condition, if the upward node is nearer to the sink then data is transferred directly to that upward node [1].

The working layout is given in Fig. 1.

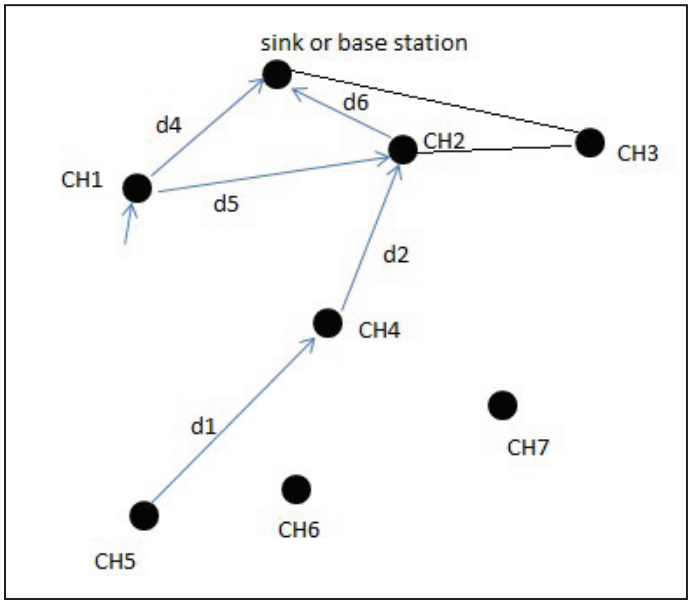

Fig. 1: Data Flow Layout [1]

Here, d denotes some distance between CHs and let us assume d2>d3, d4>d5, d8>d6 and d7<d6 the data transfer will be CH5 -> CH4 -> CH2 -> Sink AND DIRECT FROM CH1 ->SINK [1].

III. Proposed Technique

The proposed technique consists of area which includes 100x100 n nodes deployed randomly with base or initial point away from the network. We use intra- clustering and inter-clustering method for data transfer mode to enhance the MODLEACH technique by using multihop cluster heads.
The working of the method is given as:

Step 1: Initially we generate a Wireless network with n nodes having average energy and construct the MODLEACH.
Step 2: Select cluster head (CH) on the bases of probability and average energy. The CH may changes according to energy and

rounds, after this data collection is to be done from neighbour nodes that is basically the normal nodes.

Step 3: If condition satisfies check the energy of node then set the node as Cluster head (CH). OtherwiseSet the node as normal node.

Step 4: Collect the data from cluster members (CM). When the data is collected from cluster members then will CHs examine the sink and sends data to certain upward CH nodes based on distance condition and energy, if the upward node is nearer to the sink then data is transferred directly to that upward node

IV. Results and Discussion

In this section we have find the parameter values and done the comparison of proposed technique with previous technique for better results. The evaluation of the results is done by using MATLAB approach with 100 nodes network in 100m X 100m area. The field with different parameter values is shown in Table 1.

The performance is calculated using dead nodes, alive nodes, packet delivered to CHs and number of cluster heads. The analysis of the network life time and throughput is shown in Fig. 2-6.

Table 1: Value of Parameters used

Parameter	Values
Area (x, y)	100,100
Nodes (n)	100
Probability (p)	0.1
Initial Energy	0.5J
Transmitter energy	50*10-9
Receiver energy	50*10-9
Free space(amplifier)	10*10-12
Multipath(amplifier)	0.0013*10-12
Effective Data aggregation	5*10-9
Packet Size	4000 bits

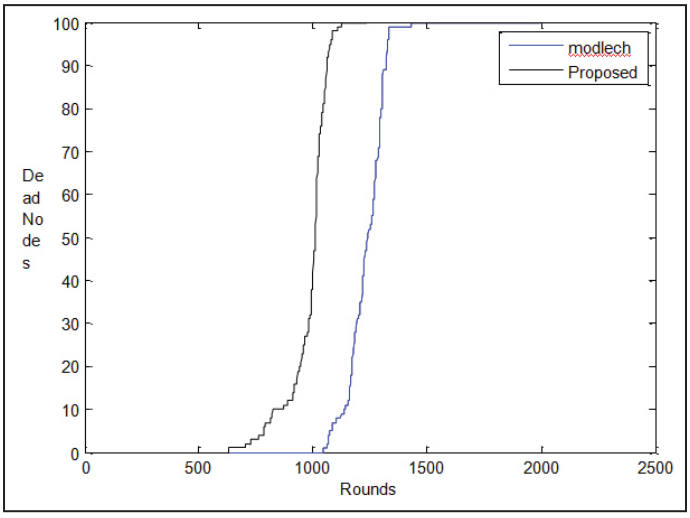

Fig. 2: Performance Network Lifetime Using Dead Nodes

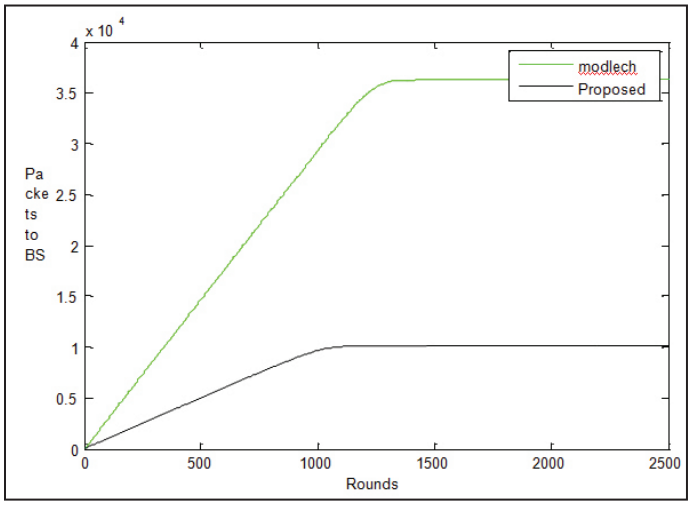

Fig. 3: Performance Using Number of Packets Delivered

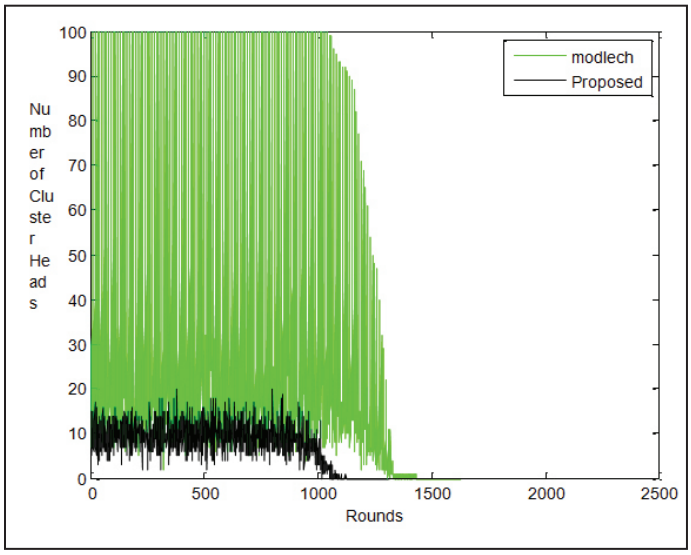

Fig. 4: Number of Cluster Head Per Round

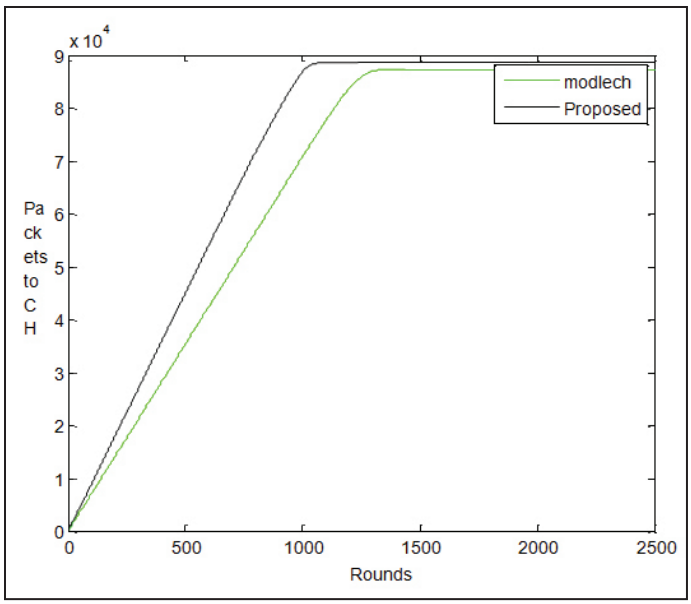

Fig. 5: Performance using number of packets delivered to CHs

V. Conclusion

By implementing the inter-cluster technique with multihop concept of clustering for better network management, the cluster head selection based on remaining energy helps to improve the network life time by minimizing the dead nodes and maximizing

the throughput values. It also increases the stability period of the network.

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