Mobile information gathering with Load Balanced Clustering and Dual Data Uploading in Wireless Sensor Networks.

Mr. Shankargouda Birada (M.tech Student,APSCE)
Mrs. Sarala D.V (Assistant Prof. APSCE Bangalore)
Department of Computer Science and Engg
APS College of Engineering Bangalore
Bangalore,India

Mr. Manjunath S. J,
Mr. Nagaraj M.R
Teach Lead Engineers Alten Calsoft Labs
Bangalore,India

***Abstract*:- A Three-platforms framework for mobile data gathering in Wireless sensor Networks, which includes the sensor platform, cluster head platform and mobile collector (called SenCar) platform. The Framework employs serves Load Balanced Clustering and Double Data Uploading which is referred to LBC_DDU scheme. At the sensor platform, a Serves load balanced clustering algorithm is proposed for sensors to self-organize themselves into cluster. The Trajectory Technique for SenCar is optimized to fully utilize double data uploading capacity by properly selecting polling points in each cluster. By visiting each selected polling point, SenCar can efficiently gather data from cluster heads and transport the data to the static data destination.**

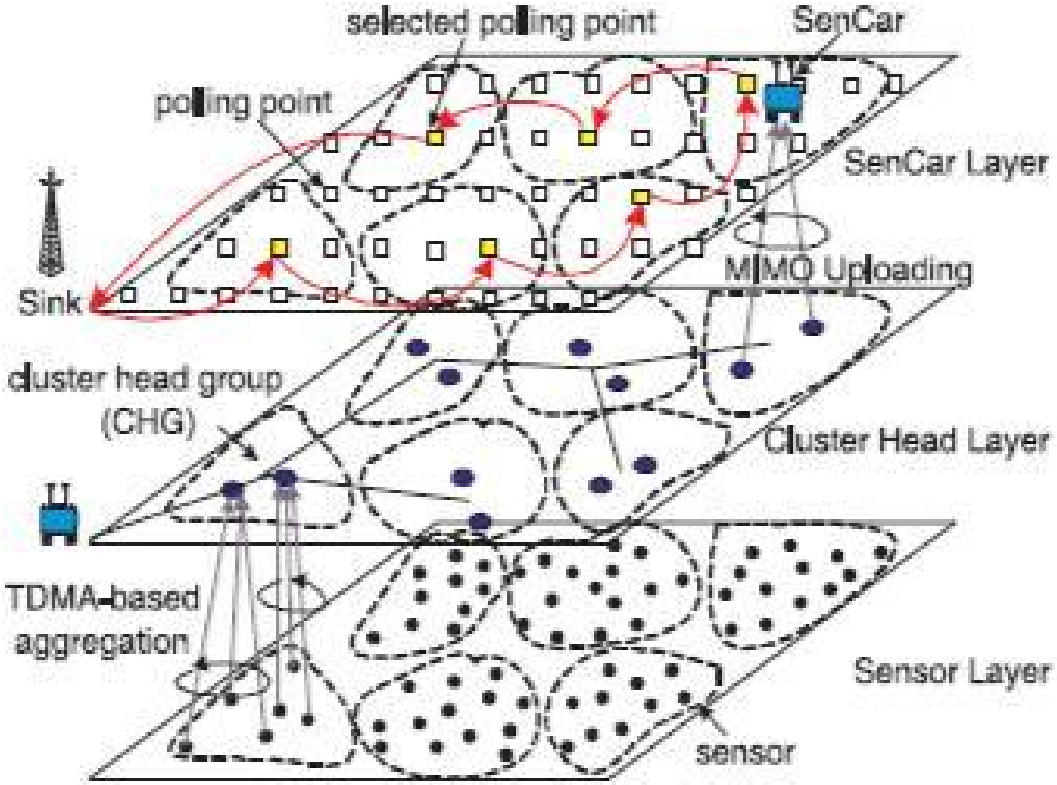
Keyword: WSNs, DDU, LBC, MU-MIMO.

I.INTRODUCTION

Wireless sensor Networks gains the world-wide attention in recent years due to the advances creates in wireless communication, data technologies and physical science field. The sensing and transmission of knowledge involves an enormous quantity of energy consumption. Sensor Networks are strongly Serves network of small, less weighted wireless node deployed in large numbers to monitor the environment by measurs physical components (Temperature, Pressure, Humidity). Each network consists of 3 Subsystem.They are sensor subsystem, processing sub system, communication subsystem. Sensor nodes used in various applications such as Military, Chemical Processing, Sensor Networks are high Served network of mini, less weighted wireless node deployed in large numbers to monitor the environment by measurement of physical components (Temperature, Pressure, and Humidity).Each network consists of 3 Subsystem. They are sensor subsystem, processing subsystem, communication subsystem. Sensor nodes used in various applications such as Military, Chemical Processing, and Disaster relief scenarios. The Load Balance Clustering (LBC) Algorithm is used to achieve the scalability because the sensors form into a cluster the sensor near static sink lose the energy faster than the other sensors. Dual Data Uploading (DDU) is used to achieve the Mobility for energy saving and uniform energy consumption and is to exploit the Multi User and Multi input and Multi Output Technology for shorten latency and to upload data concurrently which is achieved by using the SenCar because it has two antennas to upload the data concurrently from two cluster heads.

III. PROPOSED SYSTEM

In Proposed System a three-layer framework for mobile data collection , named Load Balanced Clustering and Double Data Uploading(LBCDDU).The main objective is to use Served clustering for scalability, to employ mobility for energy saving and uniform energy consumption,and to exploit Multiple-User Multiple-Input and Multiple-Output method for current data uploading to simple latency. In contrast to clustering methods LBC algorithm balances the load of inter-cluster aggregation and enables double data uploading. Different from other hierarchical methods, cluster heads do not repeated data packets from other cluster, which effective all from the problem of each cluster *head*. Instead, Sending paths among clusters are only used to way small sized identification (ID) data of group heads to the mobile collector for optimizing the data collection.



In The above figure shows the Three sensor layer frameworks such as Sensor layer,Cluster head layer,mobile collector (Sencar)layer.The sensor layer is the bottom layer of the sensor network.in which the sensor nodes are deployed in this layer.The second layer is the cluster head layer in this layer the sensor nodes creates the cluster head on the basis of energy node.In the sencar layer the created head nodes applying the load between two nodes it maintains the load.

MODULES

i) INITIALIZATION

The Initialization is done at the sensor layer and using LBC algorithm. The sensor informed the all neighbours within its immediacy. If a sensor has no neighbour exists, it claims themselves to be cluster. Otherwise sensor can be sets to its results as tentative and its selection set by the percentage of residual energy.Then it sorts the nearer with high residual energy as candidate peers

Algorithm . Phase I: Initialization.

1: My. *n* {*v/v* lies in my transmission stage, *v* ϵ S};
2: **if** My.n = ϕ **then**
3: Set *my*.cluster_head to my.id;
4: Set my.result to *cluster*_head*;*
5: **else**
6: my.init_prio Eres/Etot*;*
7: my.cluster_head 0;
8: my.result *tentative*;
9: my.*A* {*v/v* Can_Peers (*N*)}*;*
10: my.prio My.init_prio+ Σ *v My.A v*.init_prio;
11: My.*B*, My.C ϕ*;*
12: Iteration 0

ii) Status Claim

In second step of each sensor claims its results iteratively by updating its local information data. The number of iterations is controlled based on the sensor degree. The priority is partitioned into two thresholds τh, τm this is used to declare a sensor as either cluster head or cluster member.

iii) CLUSTER FORMING

The cluster formation is done by following criteria. The sensor with the tentatives status or being a cluster member, it arbitrarily choose as the clusterhead from its party peers for load balancing Purpose. If no sensor with tentative status then it chooses itself as the cluster head. The re-clustering is performed when the chosen cluster head is running on low battery. The Initialization phase is done by sending re-clustering messages to all sensors. The following algorithm explains about
how clustering is done and how they receive packets from the other sensor.

Algorithm: Cluster Formation

1: **if** my.*status=cluster_head* **then** my.cluster_head my.id;
2: **else**
3: recv_pkt ( );
4: my.*B* Fnl_N (My.*B*);
5: if my.*B* $\neq \phi$ *then*
6: my.status *cluster_member;*
7: my.*cluster_head* Rand_one (My.*B*).id;
8: send_pkt (3, My.id, My.cluster_head, *cluster_member*, My.init_prio);
9: **else**
10: my.status *cluster_head;*
11: my.cluster_head My.id;
12: snd_pkt (2, My.id, ID_List (My.*A*), *cluster_head*, *My.prio);*

iv) SYNCHRONIZATION AMONG CLUSTER HEADS

The synchronization Among cluster head is done because to perform data collection by time division.This is done by sending beacon messages to cluster heads in CHG. the message contains the local clock information and initial priority. This is done only when sencar is going to collect data. The following LBC Algorithm is used for synchronization.

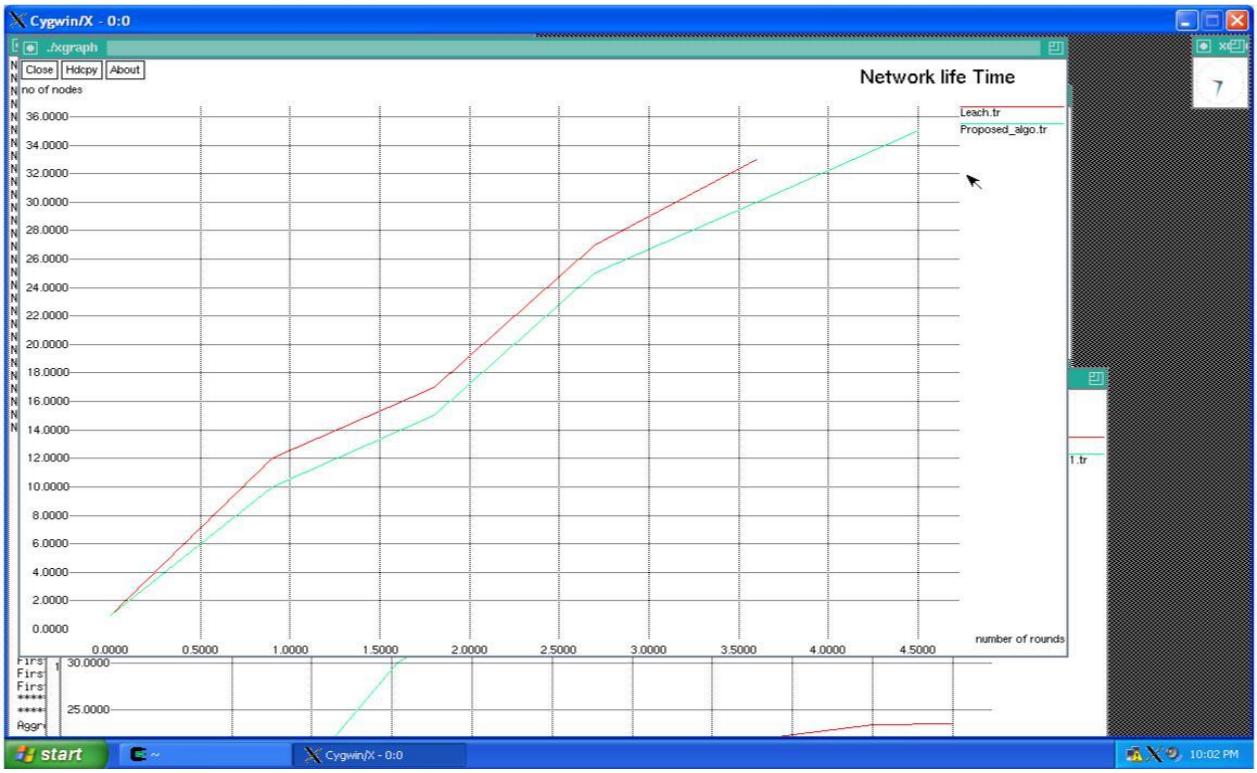
Algorithm: Synchronization between two cluster heads.

1: **if** my. *status =cluster_head;* **then**
2: send beacon msg with my.init_prio,my.clock, etc;
3: receiv e beacon msg b from others nodes in CHG;
4: **if** *b.init_prio >my.init_prio;* **then**
5: my.clock *b*.clock;

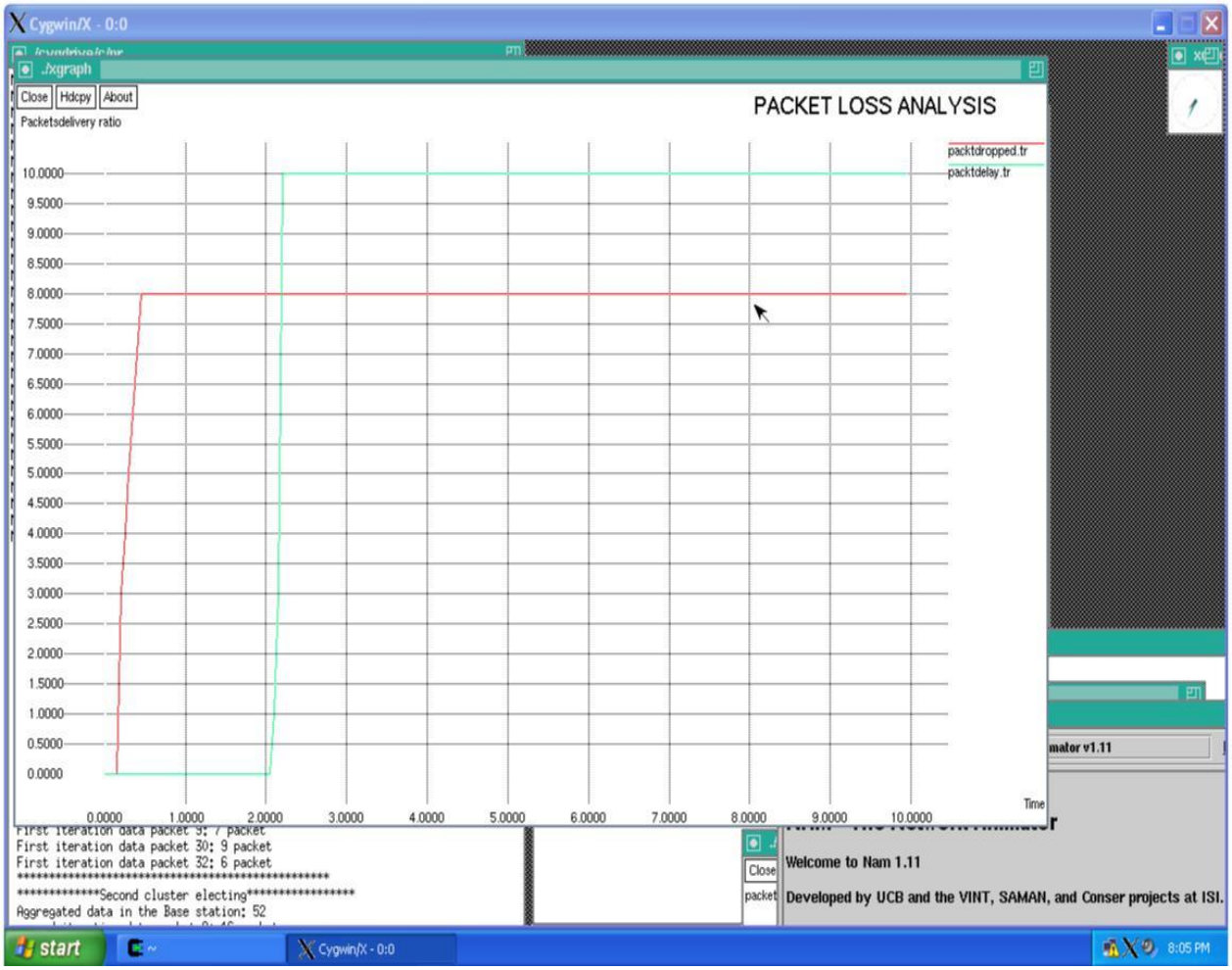
VI. PERFORMANCE

The performance of the proposed framework is reduce the average energy consumption and latency when compare with the other data collection schemes. The MIMO methods results in less energy Savings so the lifetime of the network also extended, because the sensor sends the data transmission by multi hop fashion. The low latency is achieved because using SenCar the routing.burden is reduced. The following graph shows that comparison of our proposed technique with many existing techniques like SISO & relay routing, collection tree protocol for energy consumption and evaluation of time.

Network Lifetime
In this graph shows the life time of the network.



Packet loss analysis:



In the above fig shows the packet loss analysis system the red line shows the packet dropped line.green line shows the possibility of packet loss is greater than the packet dropped.

VII. CONCLUSION AND FUTURE WORKS

The load balanced clustering-double data uploading framework for data gathering in WSN is proposed in this paper. It consist of sensor layer, cluster head layer and SenCar layer. It employs serves for load balanced clustering for sensor itself, adopts collaborative inter-cluster communication for energy-saving Transmits the data among cluster Head Groups, uses,double data uploading for speed data collection, and optimizes sencar's mobility to fully enjoy the benefits of MU-MIMO. Our performance study Explains the effectiveness of the proposed framework. The result shows that LBC-DDU can greatly consumes energy by alleviating routing problems on nodes and balancing workload among cluster head nodes.

VIII. REFERENCES

[1] b. Krishnamachandra, Networking Wireless Sensors. Oxford university, U.K.: Press,Dec. 2005.
[2] r. Shorey, A. Ananda, M. C. Chan, and W. T.Ooi, Mobile, WSN, NJ, USA: IEEE Press, Mar. 2006.
[3] X. Tang and J. Xu, "Adaptable data collection in strategies for lifetime-b constrained WSN," IEEE Trans. Parallel Distrib. Syst., vol.19, no. 6, pp. 721–7314, July. 2008.
[4] D. Gong, Y. Yang, and Z. Pan, "Energycontrol clustering in lossy WSN," J. Parallel Distrib.Comput., vol. 73, no. 9, pp. 1323–1336, Sep. 2014.