Enhanced Density Grid-based Clustering by using LZW and ABC for Efficient Routing in WSN

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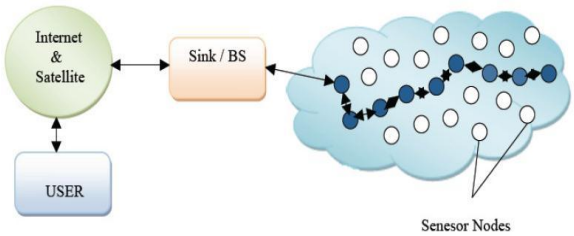
ABSTRACT
Any Wireless Sensor Network (WSN) includes extensive number of smaller sensor hubs having obliged computation potential, negligible memory, confined electric power, and limited combination imparting gadget. In this paper the the comparison will be drawn between the density grid-based algorithm and enhanced density grid-based algorithm. After using two approaches on the density grid-based algorithm (I) LZW(lempel-ziv-welch)comparison technique and (II) ABC optimization technique for efficient routing for the wireless sensor network. The improved result are shown by using some parameters.

Keywords
WSN; clustering; compressive technique; optimization technique

1. INTRODUCTION
Presently days sensor are everywhere,sensors are utilized as a part of our vehicles,in our shrewd phones,in production lines for controlling CO_2 emanations. It can be depicted as a system comprise of hubs that co-operatively sense and may control the enviornment,enabling communication amongst individual and PCs and the surroundings enviornment. The action of sensing,processing and correspondence is finished with a restricted measure of vitality by utilizing correspondence conventions and the acess control systems. WSNs nowadays generally fuse sensor center points, actuator centers, sections and clients. A broad number of sensor centers sent discretionarily inside or near the watching zone (sensor fi eld), outline organizes through self-affiliation. Sensor centers screen the assembled data to transmit along to other sensor center points by bobbing. In the midst of the technique of transmission, checked data may be dealt with by various center points to get to entryway center after multihop directing, finally accomplish the organization center point through the web or satellite. The customer confi gures and manages the WSN with the organization center point, appropriate checking missions and social event of the watched data. As related advancements build up, the cost of WSN equipment has dropped fundamentally, and their applications are a tiny bit at a time developing from the military extents to mechanical and business fi elds. The sensor center point is one of the essential parts of a WSN. The gear of a sensor center overall consolidates four segments: the power and power organization module, a sensor, a microcontroller, and a remote handset, The power module offers the tried and true power required for the framework.



The sensor is the commitment of a WSN center which can get the characteristic and rigging status. A sensor is in charge of social affair and changing the signs, for instance, light, vibration and engineered signs, into electrical banners and after that trading them to the microcontroller. Data add up to development could save essentialness and upgrade information precision, while yielding execution in various extents. On one hand, in the data trade plan, hunting down conglomerating center points, data aggregation operations and sitting tight for the section of other data are most likely going to increase in the ordinary lethargy of the framework. On the other hand, stood out from customary frameworks, sensor frameworks have higher data adversity rates. Data aggregate could signifi cantly decrease data redundancy however lose more information inadvertently, which lessens the force of the sensor sort out.

2. CLUSTERING
Hubs isolated in virtual gathering as per some rules.Nodes having a place in a gathering can execute diverse capacities from different hubs. Includes gathering hubs into groups and choosing a CH Members of a bunch can speak with their CH directly.CH can forward the collected information to the focal base station through different CHs. The principle goal of bunching are permitting information total, limits information tranmission, Facilitate the reusability of the resources,CHs and passage hubs can frame a virtual spine for intercluster steering and enhances the system lifetime.We have fundamentally three issues in WSN grouping.

Distance: Distance between hubs assumes an essential part. As separation between the hubs builds the quantity of hubs in a group reductions and it might prompt to higher utilization of vitality.

Vitality: Energy effectiveness has been known as the most vital issue in research of remote sensor systems. The vitality utilization inside a group can be lessened by diminishing the quantity of transmitting messages. Lesser the vitality utilization prompts to the more drawn out lifetime of system

Density: The expansion in sensors thickness may over-burden the system. Such over-burden may bring about inertness in correspondence and insufficient following of occasions

3. PROPOSED WORK AND EXPERIMENTAL RESULTS

3.1 Density Grid-Based Clustering Algorithm
The density grid-based clustering proposed for density issue for the clustering. The density grid based clustering is the combination of two clustering algorithim. It is acquired from density clustering and grid based clustering for vitality efficent steering. The density based clustering is another awesome strategy for clustering. The possibility of this sort of clustering is about characterizing the informational index in light of the density districts. In grid based clustering,the information space is divided into a limited number of equivalent space cells called lattices in this all clustering operation performed on the information cells rather than the information

objects [16]. The major objectives for inheriting these clustering algoritms is it discover arbitary shape cluster and noise detection. To increase the energy rate and efficient routing no optimization technique is used for removing the latency of data transmission and no compression technique. To remove these consequences we proposed two techniques one is compression technique and another routing optimization technique.

3.2 PROPOSED WORK

We proposed two approaches: (i) LZW compression technique (ii) artificial bee colony routing optimization technique. The density grid-based clustering inherit by using.

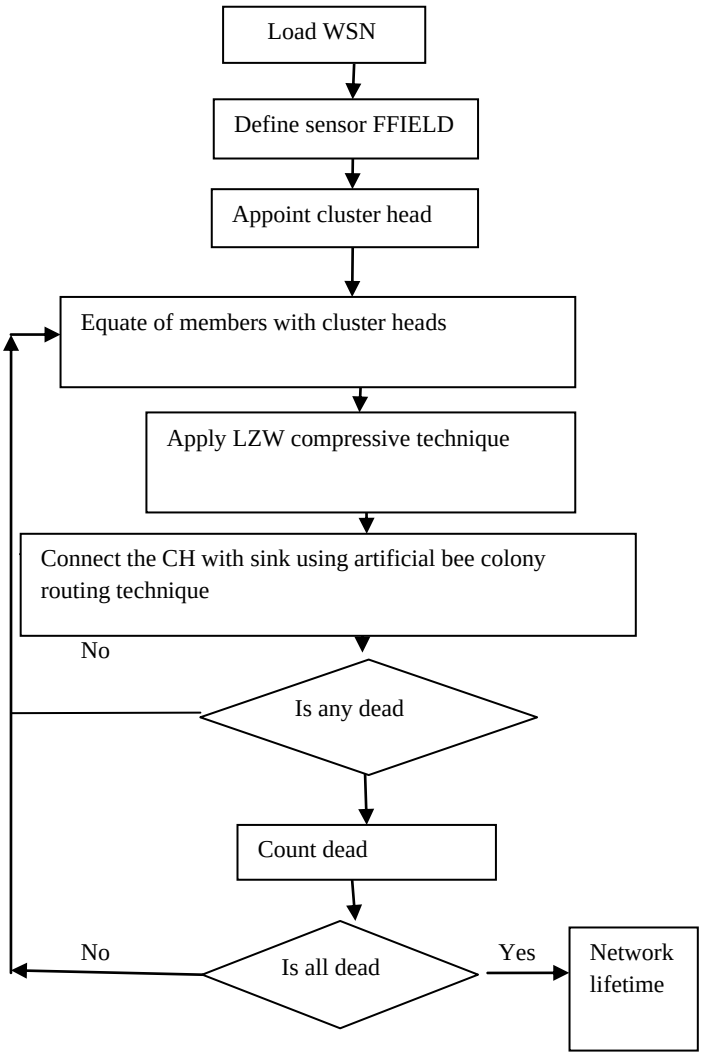


Fig 2: Proposed algorithm

The proposed algorithm consist of various steps as following:

1. Load WSN then define the sensor in the network then by using density grid-based clustering .
2. Equate the sensor members with the cluster head the cluster head by using density grid-based clustering.
3. Apply LZW (Lempel-Ziv-Welch) compression technique to the cluster head for removing the redundant data and decrease the bit ratio of the data.
4. Connect the cluster head (CH)with the mobile sink or base station by using artifical bee colony routing optimization technique or data tranmission. The ABC is swarm based optimization technique that is used for routing the data from the cluster head to the base station.
5. If any node is dead then count dead if not then go back to the 3 step where members are equate with the cluster head otherwise cout the network lifetime .

3.3 Performance Evaluation

Experiment are are approved by using two approaches (I) LZW compression technique to improve the energy rate (II) ABC routing optimization technique for efficient routing from cluster head to the mobile sink. The comparion will be drawn between the existing and the proposed and the enhanced result will be evaluated. The experimental result is divided into two parts as the two approaches are used to enhance the clustering algorithm for the efficient routing.

(I) LZW: Lempel-Ziv-Welch is a lossless compression technique that is used to improve the energy rate as if it removes the redundant data as packet size is small the transmission of data between the cluster head and the base station is fast or less time is used for data tranmission.

Table 1: comparison using LZW

Parameters	No.of nodes	Cluster formed	Network lifetime	Computation time
Existing approach	100	112	183	0.3913
	150	119	184	0.5472
	200	119	183	0.7218
	250	124	184	0.8810
	300	117	184	1.0525
Proposed approach	100	157	232	0.3730
	150	156	230	0.5991
	200	156	229	0.7038
	250	151	230	0.8603
	300	150	231	1.0369

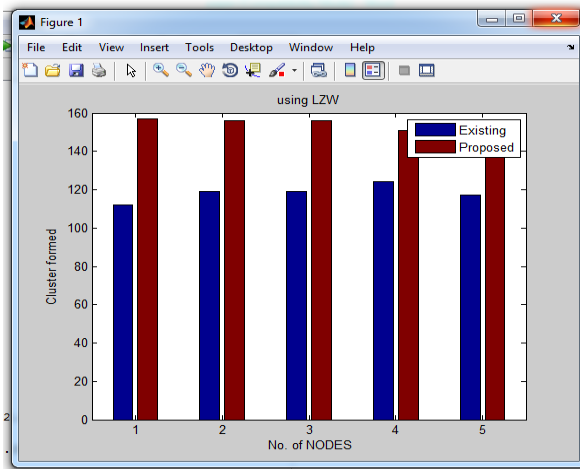


Fig 3: comparison of clusterformed graph using LZW

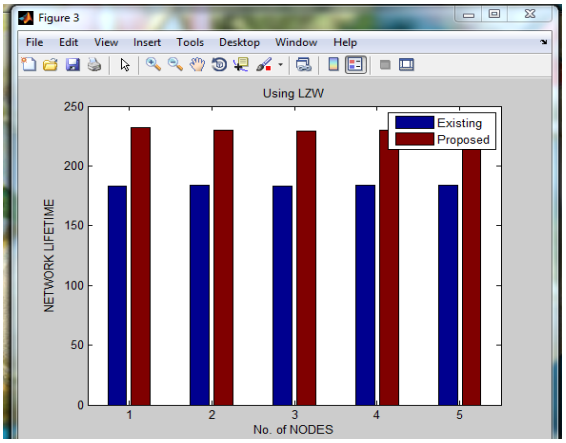


Fig4: networklifetime using LZW

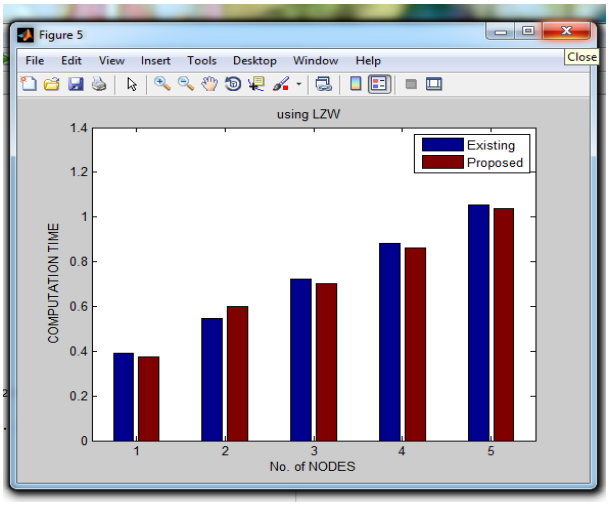


Fig5:computation time using LZW

(II) ABC:Artificial bee colony is a swarm based optimization technique that is used for eficient routing in the network. The enhanced clustering algorithm and the existing algoritm.

Table2:comparison by using ABC

Parameters	No.of nodes	Cluster formed	Network lifetime	Computation time
Existing approach	100	112	183	0.3913
	150	119	184	0.5472
	200	119	183	0.7218
	250	124	184	0.8810
	300	117	184	1.0525
Proposed approach	100	211	336	0.3697
	150	210	337	0.5227
	200	211	342	0.7011
	250	198	338	0.8614
	300	189	337	1.0383

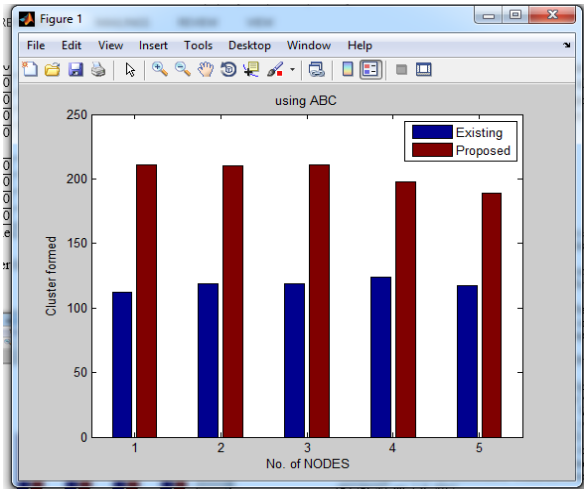


Fig6:cluster head using LZW+ABC

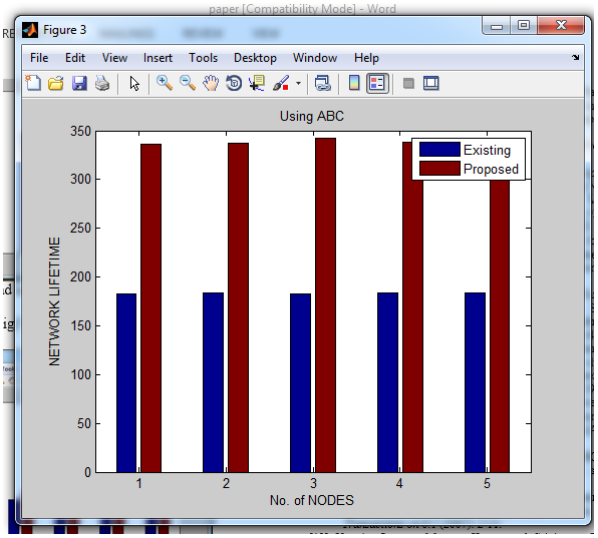


Fig7:network lifetime

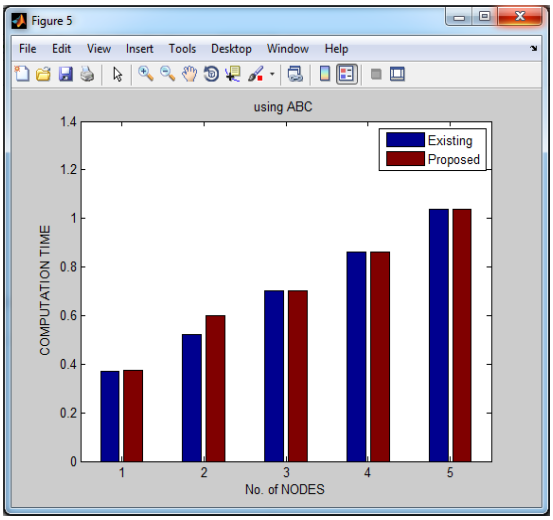


Fig8:computation time

4. CONCLUSION

The strategy has been proposed for enhancing the execution of the WSNs by utilizing the gathering based information total and with improvement strategies. This paper has proposed two new methodologies i.e. artifical bee colony swarm based optimization technique strategy for vitality effective calculation and the utilization of the compressive detecting additionally increment the execution. The proposed strategy is composed and executed in the MATLAB 2013a by utilizing remote correspondence and information examination tool stash**.**

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