ISSN 2349-0292
Impact Factor (PIF): 3.802

Global Journal of Advanced Engineering Technologies and Sciences

EXECUTION IMPROVEMENT IN DIFFRACTION BUNCH PROCEDURES UTILIZING WSN

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ABSTRACT

A wireless sensor network is a group of specialized transducers with a communications infrastructure for monitoring and recording conditions at diverse locations. Commonly monitored parameters are humidity, pressure, temperature, wind direction and speed, vibration intensity, illumination intensity, sound intensity, chemical concentrations, power-line voltage, pollutant levels and vital body functions. A wireless network communication become a common for any data and IEEE 802.11 is a used for wireless LAN communication because of its simplicity system. Wireless sensor node deployment deferent topology are frequently changed are for the using sensor node. In this paper analysis and improve energy consumption for using different node 50, 100 and 150 using K-mean, fuzzy and SOM algorithm with five cluster and as a result to increase the network life time, using fuzzy logic inference system using Matlab R2013a Simulation tools.

INTRODUCTION

A Sensor is a device that responds and detects some type of input from both the physical or environmental conditions, such as heat, light, pressure etc. The output of the sensor is generally an electrical signal that is transmitted to a controller for further processing. A wireless sensor network consists of autonomous sensors scattered in an environment where they monitor conditions such as temperature, sound, and pressure. Because of the huge size of this forest, changes in the forest affect not only the local environment but also global climate by altering wind and ocean current patterns [5, 6, 7].

WSN include wireless sensor networks applications such as wireless, Zigbee, home automation, SCADA transformer health monitoring system and so on.

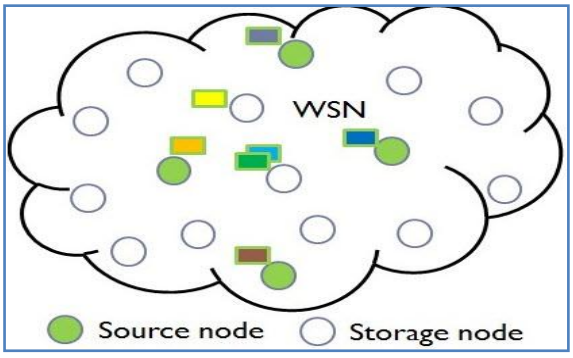

Fig. 1: Sensor Network (Source and Storage Node)

Depending on the environment, the types of networks are decided so that those can be deployed underwater, underground, on land, and so on.

II. ENERGY CONSUMPTION

Wireless Sensor Network (WSN) plays an extremely significant role in usual lives. Wireless Networks in provisions of constraints of their resources. The energy consumption is the principal concern in Wireless Sensor Network (WSN). Therefore, a numerous researchers focused on energy efficient algorithms in WSNs for extending the life time of sensors. These differ depending on the deployment of node, the network design, the characteristics of the cluster head nodes and the network operation. Energy is proficient of save by grouping nodes as clusters [5].

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A. Cluster Head

Clustering is used in order to advance the scalability of network performance. Clustering is useful in several sensor network applications such as inter cluster communication, node localization and so on. Clustering algorithms have extensive applications in the precedent years and common clustering algorithms have been proposed for energy consumption in recent years in all of these algorithms, and nodes are structured as clusters, superior energy nodes are called as Cluster Head (CH) and other nodes are called as normal sensor nodes [9].

B. Sensor Nodes Architecture

A sensor network consists of multiple detection stations called sensor nodes, lightweight and portable system, in each of which is small node. The every sensor node is equipped with a transducer, transceiver, power source, and microcomputer. The transducer generates electrical signals based on sensed physical phenomena and effects. The microcomputer processes and stores the sensor output data. The transceiver commands from a central computer and transmits data to that computer system. The power for each sensor node is derived from a battery.

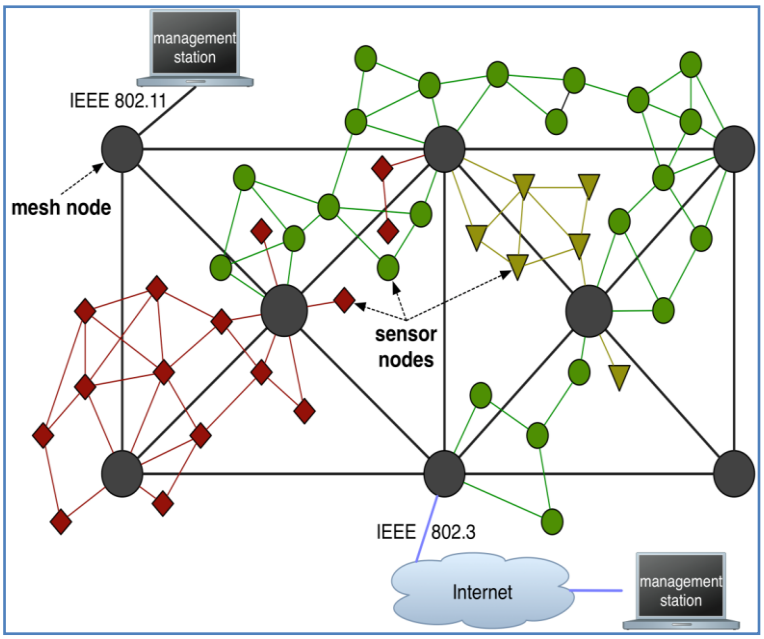

Fig. 2: Sensor Nodes Architecture

III. METHODOLOGY

The System has been implemented in the MATLAB. The wireless sensor network is design with following specification in table 1. The method of design simulation has been given following Simulation Performance Parameter below:

Table 1: Simulation parameter in WSN

S. No.	Parameter	Value
1.	Clustering technique	K-Means, Fuzzy and SOM
2.	No. of node	150, 100 and 50
3.	No. of cluster	5
4.	Update time	10 sec
5.	Update distance	50 m.
6.	Sink velocity	50-300 m/s.
7.	Network length	1000×1000 m^2

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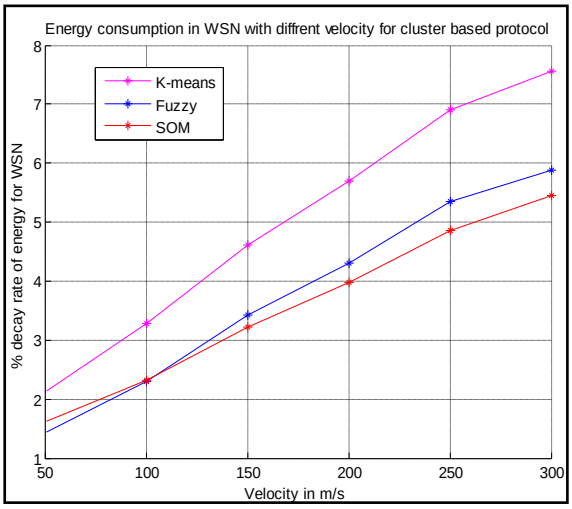
A. Energy consumption

Energy consumption is easily one of the most fundamental but crucial factor determining the success of the deployment of sensors and wireless sensor networks (WSNs) due to many severe constraints such as the size of sensors, the unavailability of a power source, and inaccessibility of the location and hence no further handling of sensor devices once they are deployed.

The generic goal here is to reduce the amount of energy consumption of some components of the application as much as possible by reducing the tasks that have to be performed by the sensors and the associated networks yet still fulfil the goal of the intended application.

We consider 5 access points with different clustering techniques K-means, Fuzzy and SOM for 50, 100 and 150 Nodes as shown in figure 3, 4, and 5 respectively and result analysis shown in table 2.



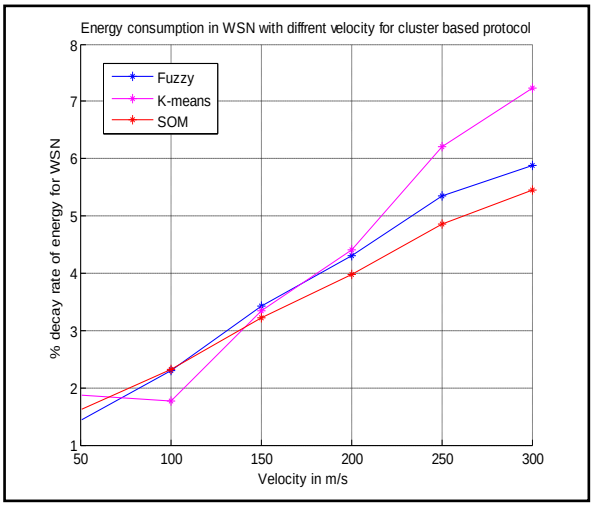


Fig. 3: Performance of Energy consumption in WSN for 50 Nodes and Fig. 4: Performance of Energy consumption in WSN for 100 Nodes

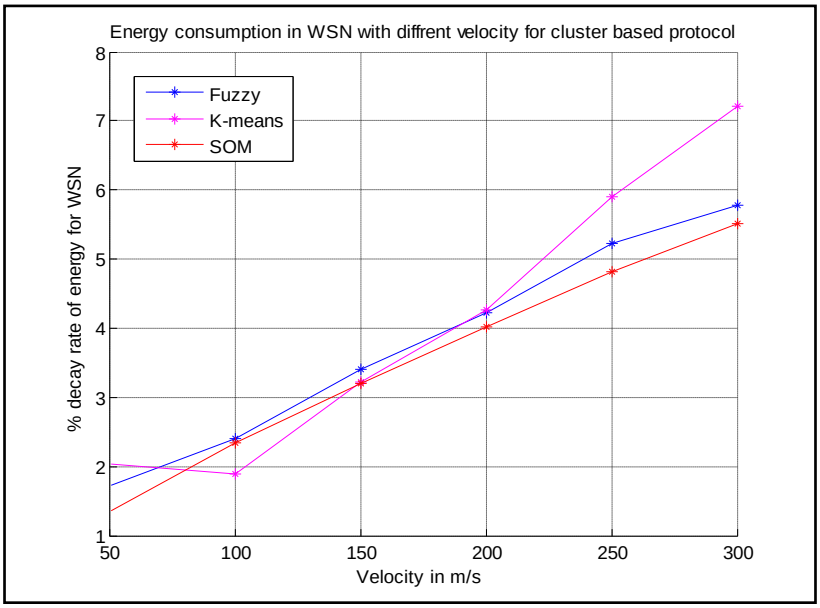


Fig. 4: Performance of Energy consumption in WSN for 150 Nodes

ISSN 2349-0292
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Table 2: Simulation result performance for Energy consumption

No. of node	Velocity in m/s	Average Energy consumption		
		K-means	**Fuzzy**	**SOM**
50	100	3.285%	2.304%	2.315%
	200	5.694%	4.309%	3.982%
	300	7.566%	5.872%	5.457%
100	100	1.768%	2.304%	2.315%
	200	4.411%	4.309%	3.982%
	300	7.226%	5.872%	5.457%
150	100	1.882%	2.392%	2.337%
	200	4.269%	4.227%	4.02%
	300	7.221%	5.784%	5.507%

IV. RESULT ANALYSIS

In the simulation result we consider main approaches Clustering technique such as SOM, Fuzzy and K-Means, with different numbers of node like 50, 100 and 150 and five clusters. The simulation performance analysis is based on comparison of energy consumption. On the consider at 50 node the minimum consumption on SOM as compared to K-mean and fuzzy logy, we also analysis on the 100 and 150 nodes are also calculated minimum energy consumption as compared to other cluster techniques.

V. CONCLUSION

In the simulation result we consider main approaches Clustering technique such as SOM, Fuzzy and K-Means, with different numbers of node like 50, 100 and 150 and five clusters. The simulation performance analysis is based on comparison of energy consumption. On the consider at 50 node the minimum consumption on SOM as compared to K-mean and fuzzy logy, we also analysis on the 100 and 150 nodes are also calculated minimum energy consumption as compared to other cluster techniques.

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