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Wireless Sensor Network Performance Improvement In Throughput

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Abstract : One of the most well-known procedures in many applications, such as industrial facility observation, medical treatment, and fire track, is Wireless Sensor Network. Cluster head selection, channel selection, dynamic fuzzy. The improvement in data transmission is observed by picking the correct channel and organizing time slots, which shows result in energy savings and an increase in network lifespan, on the parameter throughput comparison.

IndexTerms **- WSN, Dynamic Fuzzy, Throughput**

I. INTRODUCTION

A wireless sensor network is a large-area network of vitality-dependent sensing nodes that communicate. Despite the fact that WSNs have progressed significantly in many areas, maximizing the network's lifetime remains a major problem. Several methods and strategies are employed to address this disadvantage. One method [1] is to improve the point at which sensors are positioned in the grid arrangement. Sensor nodes are often made up of sensors, actuators, memory, and a processor, and they interact using wireless technology. Ecological monitoring, animal habitat monitoring, acoustic monitoring, and conflict zone surveillance are among functions that WSNs are employed for. In any case, these applications provide a variety of problems, including extending the network lifetime by allowing sensor nodes to function for extended periods of time.[2][[3]

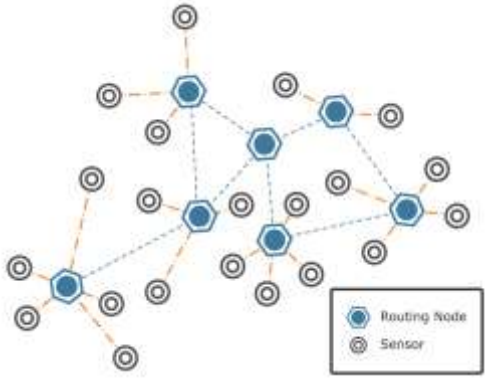

Fig. 1: A typical wireless sensor network

Fig.1 shows [18] a typical WSN[23]. The information bundle transfers from sensor nodes (SN) to the cluster heads (CH). It is the most widely used wireless sensor network guiding protocol for levelled clusters. Nonetheless, LEACH has to be tweaked to account for residual energy, area, and non-consistency transmission when determining cluster heads. It also refers to single-hop transmission modifications. Cluster head determination approach is improved by the LEACH procedure. Whether or not the nodes change CH after the first transformation can be determined by a few factors. The sink also estimates the average node energy to ensure that energy stacks are distributed evenly across all nodes by identifying nodes with energy lower than the average.[9][10].Clustering divides the network into many clusters, Clustering techniques is the LEACH protocol. The LEACH method has two stages: setup and information transmission. Clusters are shaped and the cluster head is generated at random during the cluster formation step. The information passed to CH in first stage; the CH combines the information and

delivers it to the sink to overcome the insufficiency of the LEACH in disregarding residual energy, the suggested LEACH considers both the remaining energy and are. The network is divided into clusters on a regular basis.[4][6][8]

II. LITERATURE REVIEW

Sert, S. A., et al. [14] propose a method for extending the life of a network, focusing on fuzzy implementation. The Two-Tier Distributed Fuzzy Protocol is an energy-efficient data aggregation method for multiple hop wireless sensor networks. The suggested TTDFP technique considers the position of the base station, the related node connection, and the remaining energy parameter while choosing CHs.

S.G.Santhi e al[15] As a consequence, the CHs' vitality consumption has been rectified, and the system's lifespan has been extended. These computations necessitate the development of an appropriate molecular encoding technique, as well as wellness work for directing and grouping independently. For different criteria, comparison is made..

Hossam Faris et al. [7] The essential GWO methodologies, as well as their theoretical foundation, are given in a step-by-step format. In addition, the most current GWO variants are thoroughly examined and classed as modified, hybridised, or parallel varieties.

Vimlarani et al. [17] offer a particle swarm optimization-based energy optimization method. This system uses clustering and clustering head selection to decrease power consumption. The data is compared to a competitive clustering approach to validate the performance measures.
S. Lindsey et al [16]. Fastening of nodes should be replicated in the case of a hub failure to avoid the dead hub. For data transmission, a token-based method is used, with the pioneer passing the token to the end nodes. The data will be sent from the end nodes to the nearby hub, who will then transfer the collected data to its neighboring hub.

GA Shah, et al [5] proposes a system that works QoS It also uses a cross-layer protocol. Sensor devices equipped with sound and visual data collection modules may recover media data, store or process data in real time, and link and interweave interactive media data from many sources.

A. Salim et al. [1] provide a method for balancing the load on the group head that includes a pre-steady state phase. Each group leader chooses the bunch members who will function as aggregators for each TDMA plan's edge during this phase. The residual energy, conglomeration load, and transmission load to the BS are all factors in the selection of these aggregators.

Nikolidakis et al [11] present an effective solution. They talked about a network traffic issue. The size of the cluster is crucial for network longevity, as is the choice of the head node.

Roy et al [13] offers a QoS method. The mathematical component of the future streamlining issue is handled by the system. Because networks include a large number of edges and nodes, DTR progress becomes a large and computationally difficult problem. The optimum technique for handling with issues was determined to be ACO.

Padmini, S., et al.[12] We provide a solution to the scheduling problem in clustered wireless sensor networks in this study (WSNs). The objective is to provide enhanced time division many access (TDMA) scheduling across the network, which can provide greater energy efficiency, zero conflict, and reduced end-to-end delay.

III. RESULTS AND DISCUSSION

Throughput

The pace of production or the rate at which something is processed is referred to as throughput. Throughput, also known as network throughput, is the rate of successful message transmission through a communication channel in communication networks such as Ethernet or packet radio.

Table 1 Throughput Comparison

Method	Average Throughput	Highest throughput achieved
LEACH	20.8	33
TTDFP	34.6	55
NOVAL IL-LEACH	35	52

The energy aware TDMA booking, which provides optimum hub planning, is carried out in this proposed WSN framework model. The data will subsequently be sent exclusively to the hubs that are in a transmission state to CH/HCH, ensuring that network obstruction is avoided at all costs. As a result, parcel mitigation reduces the number of unnecessary transmissions that

waste energy. The Noval IL-LEACH has a throughput of 35, which is greater than TTDFP's 34.6 and 20.8 more than LEACH's. TTDFP, on the other hand, submits a large number of alternatives that take longer to become dynamic.

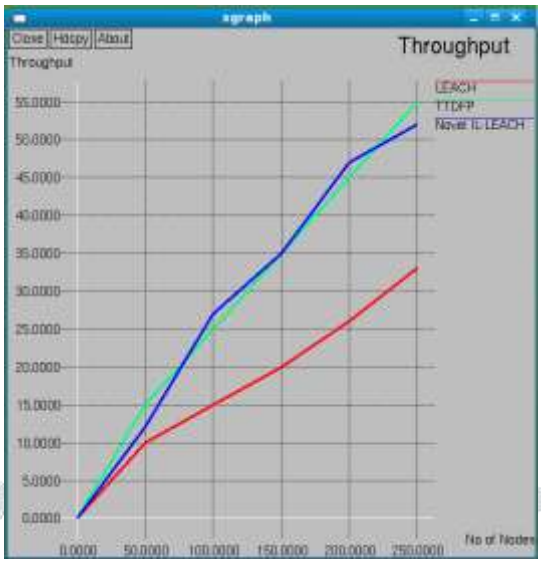

Fig. 2: Throughput comparison

IV. CONCLUSION AND EXPECTED OUTCOME

A non-specific cluster head selection technique is used in this study to control cluster head variances and provide the best clusters. This method will be utilized to control the cluster head selection process's unpredictability. When comparing the system's throughput to that of existing systems, it demonstrates a significant improvement. As a result, the network's lifespan is extended. Future research will compare the technology to another technique for extending network longevity.

V. REFERENCES

[1] A. Salim, W. Osamy, and A. M. Khedr, "Ibleach: intra-balanced leach protocol for wireless sensor networks," *Wireless networks*, vol. 20, no. 6, pp. 1515–1525, 2014.

[2] Bhat.et.al," A survey on variants of LEACH in WSN", *International Journal of Advanced Research in Computer and Communication Engineering* Vol. 4, Issue 4, April 2015

[3] Cong Z, De Schutter B and Babuska R 2018,"A new ant colony routing approach with a trade-off between system and user optimum." In: Proceedings of the 14th *International IEEE Conference on Intelligent Transportation Systems (ITSC)*, pp. 1369–1374

[4] D. Xie, Q. Zhou, X. You, B. Li, and X. Yuan, "A novel energy-efficient cluster formation strategy: From the perspective of cluster members," *IEEE Communications Letters*, vol. 17, no. 11, pp. 2044–2047, 2013.

[5] GA Shah, F Alagoz, E Fadel, OB Akan, A spectrum-aware clustering for efficient multimedia routing in cognitive radio sensor networks. *IEEE Trans. Vehicular Technol.* 63(7), 3369–3380 (2014)

[6] Gupta, S. G., Ghonge, M. M., Thakare, P. D., & Jawandhiya, P. M. (2013). Open-source network simulation tools: An overview. International Journal of Advanced Research in Computer Engineering & Technology (IJARCET), 2(4), 1629-1635.

[7] Hossam Faris, Ibrahim Aljarah,, Mohammed Azmi Al-Betar,Seyedali Mirjalili ," Grey wolf optimizer: a review of recent variants and applications:,*Neural Computing and Applications* · July 2018,Springer

[8] Jawandhiya, P. M., Ghonge, M. M., Ali, M. S., & Deshpande, J. S. (2010). A survey of mobile ad hoc network attacks. International Journal of Engineering Science and Technology, 2(9), 4063-4071.

[9] Jadhao, P. R., & Ghonge, M. M. (2015). Energy-efficient routing protocols for underwater sensor networks-a survey. Energy, 1(1)

[10] M Ozger, OB Akan. "Event-driven spectrum-aware clustering in cognitive radio sensor networks" , presented in Proceedings *IEEE INFOCOM* (2013), pp. 1483–1491.

[11] Nikolidakis S A, Kandris D, Vergados D D and Douligeris C "Energy efficient routing in wireless sensor networks through balanced clustering. Algorithms" 6(1): 29–42,2013

[12] S. Padmini, Sri. Promod Kumar Sahu (2015) "TDMA Scheduling with Leach protocol" International Journal of Innovative Research in Science, Engineering and Technology, Vol. 4, Issue 4, April 2015

[13] Roy B, Banik S, Dey P, Sanyal S and Chaki N " Ant colony based routing for mobile ad-hoc networks towards improved quality of services." *Journal in Emerging Trends and Compututer Information Science*. 3(1): 10–14,2012

[14] Sert, S. A., Alchihabi, A., & Yazici, A. (2018, December)."A two-tier distributed fuzzy logic based protocol for efficient data aggregation in multihop wireless sensor networks", *IEEE Transactions on Fuzzy Systems*, 26 (6), 3615–3629. https://doi.org/10.1109/TFUZZ.2018.2841369.

[15] S.G.Santhi, ”Evaluation of Energy Efficient Routing Protocols with Optimization Technique in Wireless Sensor Networks”, *Internat ional Journal of Advanced Scient ific Research and Management* , Vol. 2 Issue 3, May 2019..

[16] S. Lindsey and C. S. Raghavendra, “Pegasis: Power-efficient gathering in sensor information systems,” presented in *IEEE Aerospace conference proceedings*, vol. 3, pp. 3–1125, IEEE, 2012

[17] Vimlarani et al, “An Enhanced PSO-Based Clustering Energy Optimization Algorithm for Wireless Sensor Network”, *The Scientific World Journal*, Volume 2016, Article ID 8658760, 11 pages, http://dx.doi.org/10.1155/2016/8658760

[18] https://images.app.goo.gl/EuBEnnboJJDfxeZF6