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Pre Neighbour Node Route Discovery Technique for Energy Efficient Routing in WSN

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Abstract: The Wireless Sensor Network (WSN) network is group of sensor nodes. Wireless Sensor Network (WSN) is suitable for places where connection through wireless is not possible. The network establish from cables is costly and difficult to implement as compares to Wireless Sensor Network (WSN). The Wireless Sensor Network (WSN) is Auto configured Network means if WSN goes down it will start automatically with its configuration so Wireless Sensor Network (WSN) is more suitable then network with wires and cables. While building infrastructure the energy consumption is main constrain while setting route the increase in distance in distance in Wireless Sensor Network (WSN) leads to problem for network .the multi-hop transmission routing consumes less energy as compared to direct link. The significant topology management should be done for less energy consumption network in Wireless Sensor Network (WSN) Sensor network is formed by sensor nodes and they are proficient for transmission. energy consumption is major issue in Wireless Sensor Network (WSN)the routing technique are formed for better energy efficient routing and to increase the life of network for efficient data transmission in Wireless Sensor Network (WSN) The various data dissemination protocol are used for better transmission and less energy consumption environment is maintained by different protocol in Wireless Sensor Network (WSN) The performance of existing technique PSO with v-leach is less as compared to proposed PNRD (Pre Neighbor Node Route Discover technique)provide efficient result and performance to minimizing the energy Loss and increase the network life of WSN. The comparative performance of other parameters like End-to End delay, Energy consumption and data transmitted is better as compared to existing PSO v-leach technique.

Keywords: Wireless Sensor Network (WSN), PNRD (Pre Neighbor Node Route Discover technique), End-to End delay, PSO v-leach technique.

I. WIRELESS SENSOR NETWORK

The Wireless Sensor Network (WSN) that is used in an environment where the wires or cables are not possible to reach or paying cost is more of the network that will be established with cables. WSN is easy to install and maintain as compared with cable network .the data processing by sensor node is done by neighbor sensor. After that the process data wirelessly transmits the results to transit network. The wireless sensor network id distributed over large scale. The sensor nodes are feasible to send data over large range location of physical parameters like pressure, temperature, or relative humidity. WSNs can be applied in industry, agriculture, military defense, environment monitoring, remote control and city management etc. that is why WSNs are becoming more and more popular .With the latest WSN technologies small sensor nodes are using for the purpose of transferring the data packets. Few sensor nodes are utilized regarding to handle the data packets. Traffic jam normally happens while transferring the data via source node to the sink node, In WSN every sensor node should require the detailed hardware receiving mechanism, memory, processing unit etc. When some nodes transmit data on to the network the energy is definitely an essential parameter, because it determines about each and every nodes consuming energy.

WSN is used in many areas
- Home CCTV Camera networking
- Pollution looking
- Aircraft management

1.1 WIRELESS SENSOR NETWORKS APPLICATIONS:
- **Defense applications:** the military system use wireless senor network for data transmission
- **Forest applications:** the wireless sensor is used for tracking bird in forest. Forest applications are run by WSN

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1.2 CLUSTERING (Grouping)

The main goal of Clustering in wireless sensor networks is to collect data packets between sets of nodes under a group then after collecting a data packets, cluster head is responsible for transfers that packets to the base station [BS]. That main node inside a group which is responsible for collect a data packet is called a cluster-head node. Clustering provides a good lifetime for wireless sensor network. Clustering usually utilize two techniques, First it choose a cluster heads having more energy level second one is rotating a cluster heads on every round for the purpose to distribute the energy among nodes in each cluster groups. Energy consumption notification function in WSNs is a function to deliver the information to rest of the energy between each sensor nodes [10]. A lot of work has been done in WSNs with LEACH (Low Energy Adaptive Clustering Hierarchy) protocol. Recently, there are other clustering methods which are commonly used in the place of LEACH protocol. HEEP (Hybrid energy efficiency protocol).

2. ENERGY-EFFICIENT CLUSTERING STRUCTURES IN WSN

The main task of clustering is to decrease the energy consumption of node during transmission the network is divided in no of groups is called cluster .in cluster the data transmission is done by node is called cluster head. The cluster head aggregates the data of normal nodes and transmits to base station for transmission. The cluster head selection is done the basis of node energy the node which is having higher energy it is considered as cluster head All sensors in a cluster communicate with a cluster head that acts as a local coordinator or sink for performing intra-transmission arrangement and data aggregation. The cluster head send data to base station for sending data to network the data transmission range between clusters is less as compared to entire network due to which the bandwidth consumption decreases in cluster as compared to entire network the main aim is to reduce bandwidth while data transmission Clustering usually localizes the routing setup within the cluster and therefore it reduces the routing overhead by each node and the topology maintenance overhead. Using clustering, the network appears smaller and more stable.

II LITERATURE REVIEW

Alka Singh et al. [2016 [1] The cluster head and bad habit bunch head determination is examined and a strategy for vitality proficient steering is displayed in view of both molecule swarm enhancement procedure and V-LEACH convention. Execution examination with existing filter convention indicates proposed convention gives better execution to limit vitality dissemination in the transmission and expands the life time of the remote sensor systems, additionally other similar execution measurements like End to End delay, information transmitted and add up to vitality expended demonstrates proposed convention gives better execution in contrast with existing drain convention.

Amini et al [2014] [2] has clarified that bunching information streams has drawn heaps of consideration over the most recent couple of years due to their consistently developing nearness. Information streams put extra difficulties on bunching, for example, restricted time and memory and one pass grouping. Moreover, finding groups with discretionary shapes is essential in information stream applications. Information streams are unending and advancing after some time, and we don't have any learning about the quantity of bunches. In an information stream condition because of different elements, some clamor shows up sporadically. Thickness based strategy is a noteworthy class in grouping information streams, which can find discretionary shape bunches and to distinguish commotion.

Haghighi et al[2013][3] has proposed a novel calculation that is fit for recognizing noteworthy change focuses, or " purposes of intrigue " in an unsupervised manner over numerous information streams in parallel. This calculation depended on an incremental dimensionality lessening approach known as subspace following. Arousing abuses this calculation to identify the change indicates and progressively react the applications' requests while executing simultaneous application exchanging operational ideal models and redesigning at group and system levels.

A. Amini,et al [2013] [4] has proposed a Multi-Density bunching calculation for information stream called Mu Di-Stream. Mu Di-Stream is an online-disconnected bunching calculation, in which the online stage shapes center scaled down groups utilizing another proposed center separation and disconnected stage groups the center smaller than expected groups in light of a thickness based strategy. The new center separation called smaller than expected center separation is computed in light of the quantity of neighboring information focuses around the center. Consequently, the calculation has distinctive center separations for various groups that prompts cover multi thickness conditions..

D. R. Edla et al [2013] [5] Framework based bunching strategies have been broadly connected on substantial informational indexes in light of low computational cost, has proposed another calculation for matrix based grouping by finding the ideal network estimate utilizing the limits of the bunches. The calculation has straight time unpredictability. The issue of exceptions is settled with the assistance of nearby anomaly factor (LOF).

III PROPOSED METHODOLOGY

The main work of proposed technology to find pre-determined for transmission. The pre paths are discover in proposed technique while sending hello packet the proposed techniques work by finding pre-determined path from neighbor nodes by finding the availability of path from source to destination. These path are saved and used for further

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transmission in network the pre identified path help in transmitting data efficiently and minimizes energy consumption in network transmission

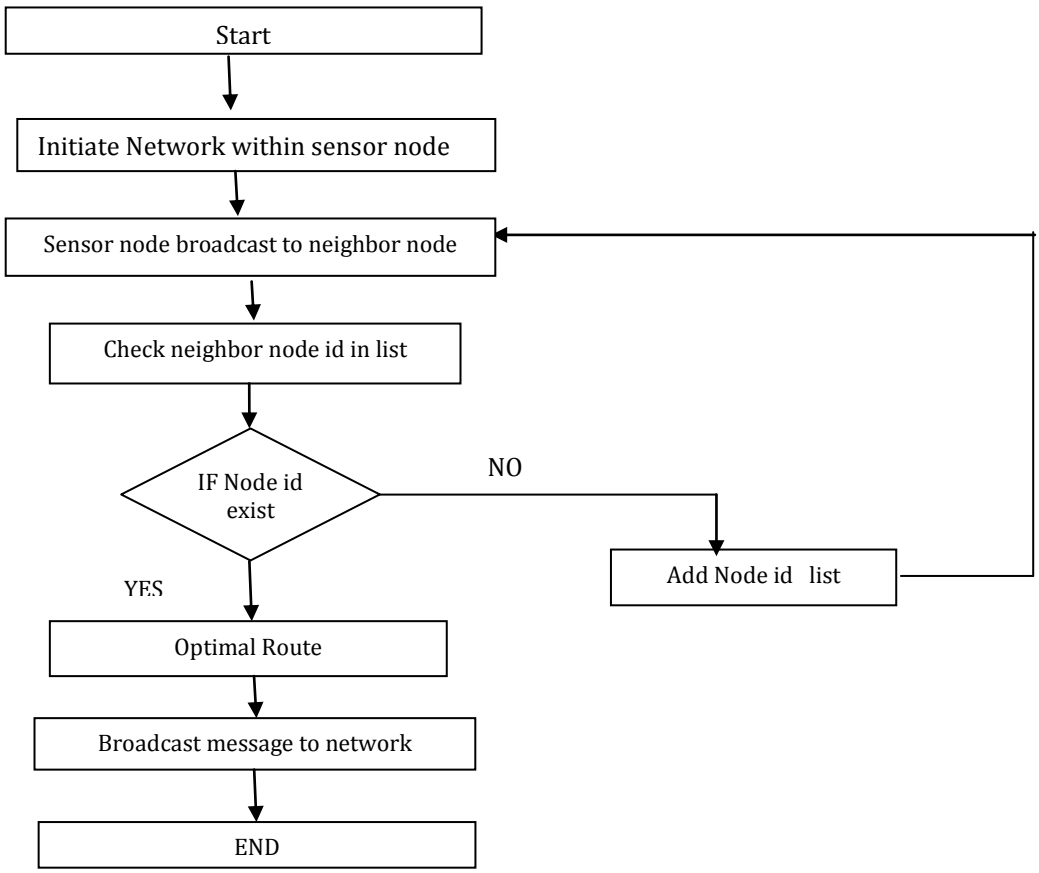
A Neighbor Discovery and Topology Construction

The base station starts neighbor revelation stage after the sending of sensor hubs. Here every sensor hub will communicate NBR parcel once. Toward the finish of the neighbor disclosure stage, every hub communicates the NBR control parcel. The NBR bundle comprises of sender id. At whatever point a hub gets the NBR parcel, it does the accompanying operations:

1. Checks the neighbor list for the presence of the sender hub id. In the event that the sender id is not accessible in the neighbor list, at that point include it, else drops the parcel.
2. In the event that NBR Sent is false, at that point beneficiary hub makes NBR Sent as genuine and communicates the NBR bundle After the neighbor revelation stage, topology development stage begins. In this stage, every hub transmits their neighbor data to the base station. For this, every hub utilizes multicasting method as opposed to flooding. The hubs begin sending the neighbor data to the base station through transfer hubs. The sender hub picks the hand-off hub from NBR(x) and advances the neighbor data to the base. A sensor hub will forward the NBR INFO parcel just once, to abstain from circling in the system.

C Proposed Algorithm

1: for time=1 to simulation time
2: for i=1: N, N sensor nodes for data transmission
3: The neighbor route selection
4: Check neighbor id in list
5: if (Node ID Exist)
6: Route is optimal for transmission
Else
7: Add to neighbor Node ID list GOTO step 3
8: Broadcast message
9: end if
10: end



Flow Chart for proposed Algorithm

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IV RESULT ANALYSIS

1 Energy Consumption: The proposed technique work on minimum consumption of energy the proposed methodology help network in transmission with less energy consumption .the technique followed by proposed require minimum energy for operation as compared to previous technique .the proposed technique increases the lifetime of the sensor nodes .the results shown in fig 1 and table 1 shows that energy consumption proses technique is less as compared to previous technique .the performance of proposed technology is better as compared to previous technology.

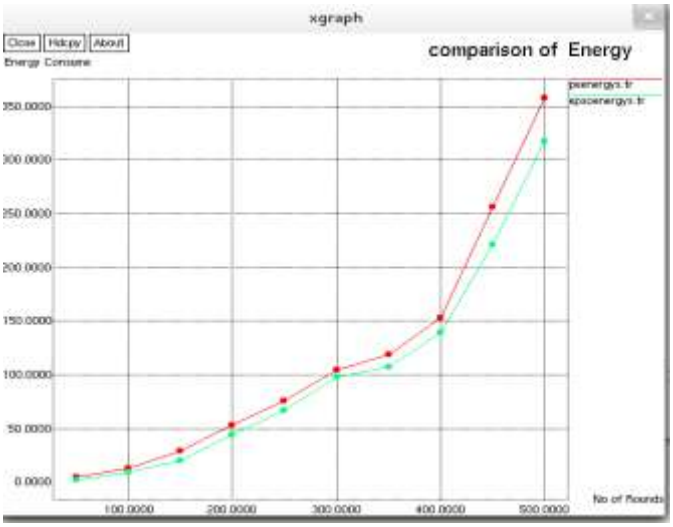

Fig1 Comparison of Energy

no of rounds	Previous Technique	Proposed Technique
50	2	1.5
100	9	7
150	20	17
200	44	40
250	67	60
300	101	98
350	107	105
400	140	135
450	221	215
500	317	290

Table1 Comparison of Energy

2 No of Packets: the aim of proposed technique is to maximize lifetime by efficent transmission between source and sink As can be expected, a mobile sink increases network lifetime.the proposed technique are better as compared to previous technique .the result shown in Fig 2 and Table2 Shows that no of packet transmitted by proposed technique are higher as compared to previous technique

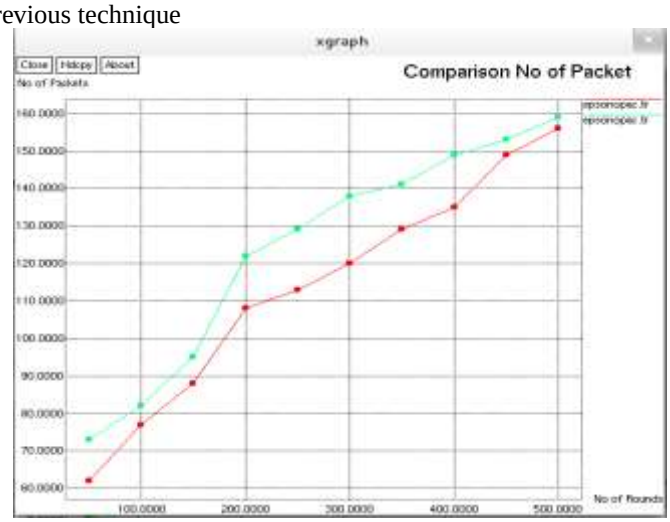

Fig2 Comparison no of packet

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no of rounds	Previous Technique	Proposed Technique
50	63	71
100	79	82
150	87	93
200	109	122
250	112	129
300	120	137
350	129	141
400	136	149
450	149	153
500	155	160

Table2 Comparison no of packet

3 Delay: the proposed technique enhance network connectivity by finding pre optimal path .the proposed enhances working of network within range .the no packet transmitted takes less time as compare to previous technique the round trip time results of proposed time technique shows better result ass compared to previous technique .the table3 value shows that at different round trip time.the result perfomed by proposed technique are better as compared to previous technique which shows that proposed technique has better performance as compare to previous technique

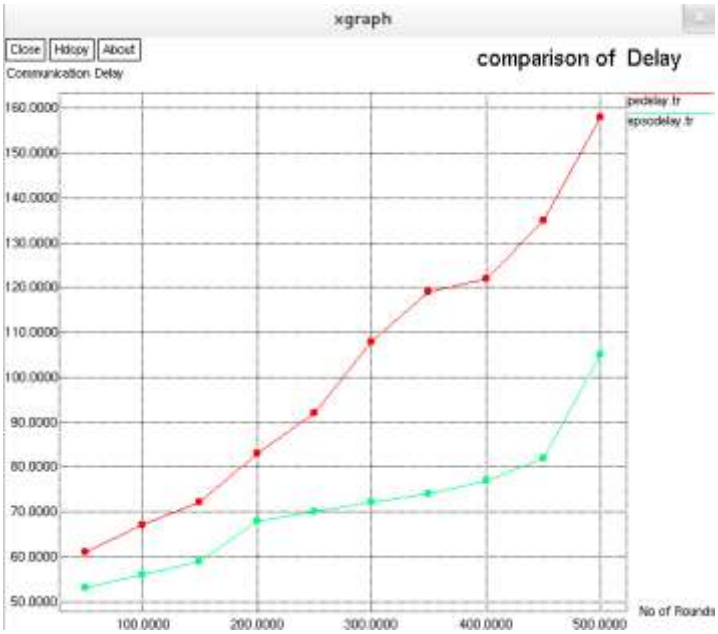

Fig 3 Comparison of delay

no of rounds	Previous Technique	Proposed Technique
50	60	53
100	67	58
150	73	59
200	82	68
250	92	70
300	108	72
350	119	75
400	122	78
450	135	82
500	158	115

Table3 Comparison of delay

V. CONCLUSION

The technique main purpose is to find neighbors nodes for transmission which will increase energy and lifetime of network. The route discovery process is easier in proposed technique it increases the packet throughput and reduces

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communication overhead. The main aim of this protocol is saving the energy during communication. Proposed technique consumes a small amount of energy during node discovery and data transmission. In case of node failures, Proposed technique protocol easy to handle the node breakdown problem and chose alternate shortest path compared with previous work.

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