specific area and finite number of sensor nodes. For cluster formation we used k-medoids clustering algorithm. K medoids forms clusters and gives cluster heads

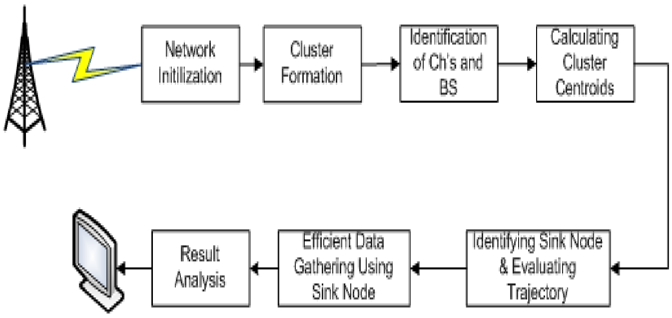


Figure 2: Block Diagram of Proposed System

3.1 K-medoids Clustering

Not the same as customary bunching calculations for remote sensor systems, in which bunch heads are chosen firstly and groups are shaped besides by letting non-head hubs associate with some head, the proposed grouping investigates the opposite system: firstly, the hubs are separated into particular bunches with the kmedoids grouping plan, and after that one hub inside every group will be chosen to be the head. Our system for building groups in dispersed manner performs over conventional LEACH-like calculations as far as activity parity and execution cost, accordingly prompting a more extended framework lifetime. We utilize the k-medoids calculation to gap the system hubs into k unmistakable bunches. Calculation 1 exhibits the stream of developing groups. The essential thought of the proposed bunching calculation lives in consistent cycles until an arrangement of heads is made sense of such that these heads circulate uniformly inside of the system region and all bunches are about the same in the quantity of part hubs.

3.2 Algorithm for K-medoids:

Require: the network graph $G(V, E)$; k, the number of clusters to be formed; λ, the fading factor of physical channel

Ensure: a set of clusters involving all nodes

Step 1: Select k nodes randomly as initial cluster heads, and use M to denote the set of those k cluster heads.

Step 2: Establish an empty set C_i for head h_i of M, and initialize C_i by $C_i \cup h_i$

Step 3: Establish a set N initialized empty

Step 4: while any node u of V/M do

Step 5: u chooses h_i of M as its head such that

$$\arg_{h_i} \min\{d^{\lambda}_{u,h_i} \mid \forall h_i \in M\}$$

where d_{u,h_i} is the Euclidean distance from u to h_i.

Step 6: $C_i \leftarrow C_i \cup u$

Step 7: end while

Step 8: while any C_i do

Step 9: Select a node u from C_i as new head such that

$$\arg_u \min\left\{\sum_{v=1, v\neq u}^{|C_i|} d^{\lambda}_{u,v} \mid \forall u \in C_i\right\}$$

Step 10: $N \leftarrow N \cup u$

Step 11: end while

Step 12: if $N \neq M$ then

Step 13: $M \leftarrow N$

Step 14: $N \leftarrow \emptyset$

Step 15: goto step 4

Step 16: end if

3.3 The trajectory of the mobile sink

After clustering of WSN nodes, we will determine the actual trajectory of the mobile sink. The mobile sink traverses through clusters and aggregates data from various nodes. Since it is possible to increase efficiency by reducing the travelling time, it is preferable that the mobile sink traces the shortest path among the cluster centroids.

3.4 Mobile Sink Data Collection

After arriving at the centroid, the mobile sink will broadcast data request message to nodes, which will in turn try to send the data collected to the mobile sink either directly or via other nodes in a multi-hop fashion.

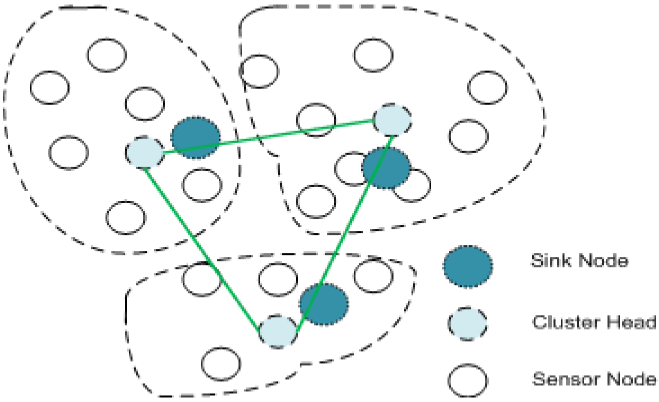
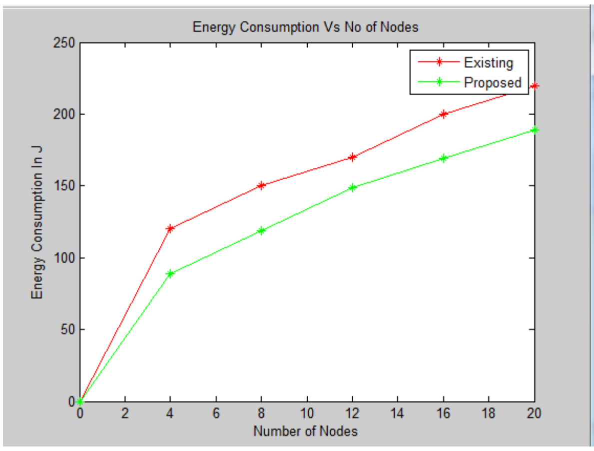


Figure 3: Data Gathering using Sink Node Trajectory

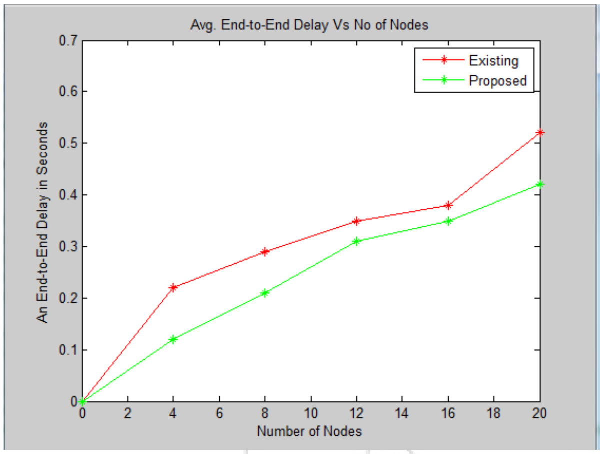
In addition to sending the collected data, the nodes will also rebroadcast the data request message to their Neighbouring nodes. And also main adjective of the sink node is to gather complete data with minimal trajectory, for minimizing energy consumption.

4. Performance Evaluation

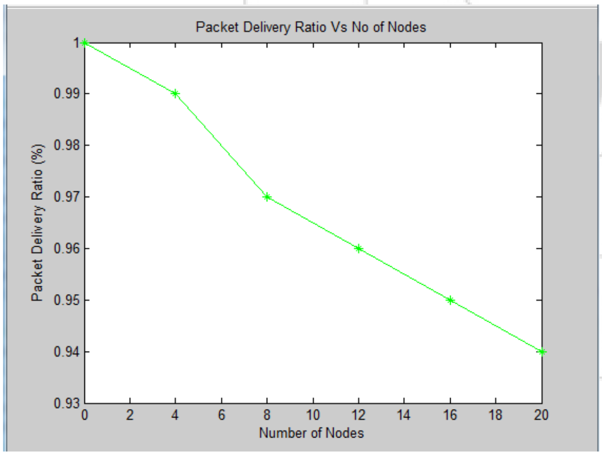
The proposed clustering algorithm is simulated by MATLAB. First we evaluated efficiency in energy consumption, second we evaluated reduced delay in data communication and finally we calculated packet delivery ratio. And also by using k-medoids algorithm optimal number of clusters are formed hence decreased in energy consumption which leads to increased network lifetime.



a. Energy Consumption of Sensor Nodes



b. Delay in Data Communication



c. Packet Delivery Ratio of Proposed method

5. Conclusion

In this paper we executed a vigorous calculation for huge information social event utilizing k-medoids calculation. K-medoids grouping is dependable bunching calculation in lessening force utilization for the most part for system with extensive number of sensor hubs. K-medoids is likewise viable calculation in selecting centroid. For lessening postponement furthermore enhance the execution of the system we utilized sink hub direction to assemble information. The outcomes demonstrate the adequacy of proposed framework. Our system is exceptionally vigorous in diminishing deferral, vitality utilization furthermore the execution of WNSs magnificently progressed.

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