Cluster base station communication distance

How is sensor data transmitted to the cluster head?
The sensor data is then transmitted to the cluster head (CH) over a shorter distance. The CH sends the aggregated data to the BS after filtering out redundant data from the cluster members (CM).

What is Cluster Architecture in wireless sensor networks?
Cluster architecture in wireless sensor networks. The process of selecting an appropriate CH within a network and establishing a stable cluster to minimize energy consumption has been demonstrated to be an NP-hard problem 8, traditional clustering technology may not be capable of achieving the optimal solution.

How are sensor nodes arranged in a cluster architecture?
As shown in Fig. 1,the sensor nodes are arranged into clustersin the cluster architecture,and the sensor nodes with lower energy are used for sensing tasks. The sensor data is then transmitted to the cluster head (CH) over a shorter distance.

What happens if a network has a small number of cluster heads?
However,when a large or small number of cluster heads are selected,the network may create a weak cluster,which could lead to some nodes dying early,restricting network throughput and making it difficult for the network to fully monitor the environment.

Can metaheuristic algorithms improve clustering in wireless sensor networks?
Researchers have begun to try to use new metaheuristic algorithms to obtain better clustering schemes in wireless sensor networks. Jaiswal et al. 29 used the grey wolf optimizer (GWO) to select CH within the cluster according to different factors such as energy level, node degree, and BS distance.

What are cluster-based routing protocols?
Cluster-based routing protocols have been widely designed to improve the energy efficiency and lifetime of WSN11,among which LEACH protocol is one of the most famous clustering protocols 12.

The proposed model employs two approaches named a mobile base station and a cluster-based network technique to reduce the communicating distances between sensor ...

Therefore, the nodes far from the primary cluster head can be organized based on their distances to the closest cluster head to reduce their data transmission distances to the cluster...

The cluster size is determined by the threshold transmission range of the sensor radio energy model, guaranteeing that all network communication stays within this threshold ...

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In this section, a WSN Cluster Head Positioning algorithm (CHP) is proposed, which aims at reducing the total path-loss among all communication links between the SNs and the ...

After choosing cluster head nodes, the base station broadcasts the list of the new cluster head nodes to the sensor network. In the data communication phase, sensor nodes transmit their ...

Because the energy consumed by cluster heads to send data to the base station is dependent not only on the data bit rate but also on the physical distance between cluster ...

An improved static clustering base station coordination strategy is proposed. Intra-cluster base stations use interference cancellation techniques to the edge users in adjacent clusters in ...

In this study, we developed a stochastic model to analyse the information and communication interaction between a base station and a set of subscribers in a 5G cluster with variable ...

The Time Division Multiple Access (TDMA) mechanism also utilized to schedule the transmission of data packets to cluster heads nodes and to avoid data packet collisions at the base station.

We developed a mixed integer programming model to provide the optimal location of base stations at different time periods with the network"s minimum total cost (i.e., installation ...

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