

Centroid Dynamic Sink Location for Clustered Wireless Mobile Sensor Networks

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The wireless sensor network consists of three main components: a large number of small-sized sensors, a remote sink connected to the internet, and a cluster head whose existence depends on the overall network structure. The sensor in the wireless sensor network can be deployed through many ways, such as a simple model, a random walk model, and a random direction model. There were studies that examined networks and their various installation methods to save energy consumption and increase the network lifetime. These were usually achieved by formatting the network structure with one or multi-sinks, with or without clusters, or using static or mobile components such as sink, cluster heads, and sensors. In addition, using a homogeneous or heterogeneous environment implies using special devices as cluster heads or electing them from sensors periodically at specified times depending on different protocols. Previous studies did not focus on saving energy when all network's components were mobile. Our scheme, Centroid Dynamic Sink Location (CDSL), focuses on this case and aims to reduce the energy consumption through moving the sink to the optimal location with respect to the cluster heads. The simulation results indicated that the CDSL scheme increases the network lifetime by saving the cluster heads energy. When the sink is mobile, the network lifetime increased in all cases from 14.21% to 53.09% compared to that which use a fixed sink.

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