Abstract

In Recent studies, mobile element acts as a mechanical carrier equipped with a powerful transceiver and battery. It directly collects the data from the sensors in the sensing environment via single-hop communication when traversing its transmission range and eventually delivers the collected data to the remote central. As a mobile element collects the data from every sensor node, the length of the mobile element tour will be increased. It results in increased data gathering latency. To solve this problem, several algorithms have been proposed. One of them called Toward Energy Efficient Big Data Gathering (TEEBD). Even it simplifies the mobile element data gathering by calculating the optimum number of clusters. Mobile element should wait until all of its cluster members uploads its data. It gives increased data gathering latency, and Packet loss due to buffer flow. In this paper, we propose two novel approaches called Energy Efficient Big Data Gathering using Local data Collector (EEBDG-LC) and Energy Efficient Big Data Gathering using Local data Collector with Threshold (EEBDG-LCWT). First approach concentrates on placing a local data collector in every centroid of the region. In which mobile element collects the information only from local data collector instead of all of its sensor
nodes. It increases the speed of mobile element data gathering. The main goal of the second 
approach is to reduce the traffic in the local sensing region of EEBDG-LC based on the 
threshold value. In which node reaches the threshold value are only allowed to transmit data to 
the local data collector. Others go to the sleep mode immediately. Thus, increases the lifetime 
of the sensor network, and packet delivery ratio. Various data gathering mechanisms such as 
mobile element data gathering and data gathering using UAV have been used and comparison 
between these two has been done. The effectiveness of our approach is validated through 
extensive simulations.

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Index Terms

Computer Science  Wireless

Keywords

Local data collector, Unmanned Arial Vehicle, Threshold, Mobile Element.