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PDDA: Priority-Based, Dynamic Data Aggregation Approach for Sensor-Based Big Data Framework

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Abstract : Sensors are being used in various applications such as agriculture, health monitoring, air and water pollution monitoring, traffic monitoring and control and hence, play the vital role in the growth of big data. However, sensors collect redundant data. Thus, aggregating and filtering sensors data are significantly important to design an efficient big data framework. Current researches do not focus on aggregating and filtering data at multiple layers of sensor-based big data framework. Thus, this paper introduces (i) three layers data aggregation and framework for big data and (ii) a priority-based, dynamic data aggregation scheme (PDDA) for the lowest layer at sensors. Simulation results show that the PDDA outperforms existing tree and cluster-based data aggregation scheme in terms of overall network energy consumptions and end-to-end data transmission delay.

Keywords : big data, clustering, tree topology, data aggregation, sensor networks
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