An Efficient Collision-Free Data Aggregation Model for Data Transmission in Wireless Sensor Network

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Abstract:
Over the past few decades, Wireless Sensor Networks (WSNs) have attracted much attention from academia and business and are now integrated into the Internet. The restricted energy of WSNs directly impacts the lifespan of WSNs. Data transfer from sensor nodes to the base station is a significant energy consumer. Therefore, every practical option that aims to cut down on data transmissions has been considered by researchers. Collision is one of the main problems with data aggregation that increases energy waste. A data aggregation collision issue causes aggregation latency and data loss. Data must be retransmitted due to the problem of data loss, which costs more energy to transport the same data. As a result, when the collision problem is solved, the energy optimization of data aggregation may be considerably enhanced. The energy efficiency of the sensor nodes is increased in this research and a hybrid method for collision-free data aggregation integrated with Hybridized Collision free Data Aggregation on a delay-aware data aggregation (DA-HCDA) tree is proposed. The existing state-of-art technique is compared with the proposed approach, whereas the proposed method outperforms.

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Contents

Wireless Sensor Network (WSNs) can be described as a self-designed and infrastructure-less wireless network for screening physical or natural scenarios namely temperature, weight, sound, vibration, movement, strain, motion, or pollutants that are observed and investigated. Wireless technological innovation can reach virtually across and outside of the earth. The enormous success of wireless voice and messaging services has enabled its utilization in the field of private, commercial, biological, and other computing fields [1, 2].