

Fuzzy-GRA based Estimation of Data Collection Points for Mobile Data Collection in IoT-WSN

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Abstract:

In Internet of Things (IoT) based Wireless Sensor Networks (WSN), during data collection from a Mobile Data Collector (MDC), the Data Collection Points (DCPs) should be selected based on various factors apart from required energy. The stopping time of MDC should be enough to collect data from all the nodes without increasing the data gathering delay. This work develops a Fuzzy-GRA based estimation technique of DCPs for MDC in IoT-WSN. In this technique, the Fuzzy-Grey Relational Analysis method is used for selecting the DCPs with maximum coverage, residual energy and buffer size. By simulation results, we show that the data redundancy is reduced, and energy is saved. By simulation results, it has been shown that the Fuzzy-GRA attains maximum delivery ratio of 0.96 and residual energy 24 joules with reduced data collection delay of 0.2 seconds.

Keywords:

Internet of Things (IoT), Wireless Sensor Network (WSN), Mobile data collector (MDC), Data Collection Point (DCP), Fuzzy-Grey Relational Analysis (Fuzzy-GRA).