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Trust Aware Congestion Control Mechanism for Wireless Sensor Network

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Abstract

Congestion in wireless sensor networks (WSNs) can occur from various factors, including resource limitations and the transmission of packets surpassing the capacity of receiving nodes. This congestion may arise from natural causes or be exacerbated by self-serving nodes. Furthermore, malicious sensor nodes within WSNs have the capability to instigate congestion-like scenarios by either flooding the network with redundant fake packets or maliciously discarding genuine data packets. Relying solely on conventional congestion control techniques proves inadequate for ensuring fair delivery, necessitating a proactive approach to prevent such adversities by segregating these nodes from the network. Existing congestion control strategies often make the unrealistic assumption that all nodes are authentic and behave appropriately. To address these challenges, a proposed Genetic Algorithm based Trust-Aware Congestion Control (GA-TACC) not only manages congestion under natural circumstances but also considers scenarios where hostile nodes deliberately improve packet delivery. The GA evaluates the credibility score (CS), contributing to

enhanced performance, and GA-TACC demonstrates superiority over existing state-of-the-art techniques for wireless sensor network. © 2025, Bright Publisher. All rights reserved.

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