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SPECIAL ISSUE ARTICLE

Enhance Reliability and Security in VANET Using Clustering Based on ANT Colony Optimization and Fuzzy Logic

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ABSTRACT

Vehicular Ad Hoc Networks (VANETs) play a crucial role in intelligent transportation by enabling communication between vehicles and infrastructure. However, ensuring secure, reliable, and consistent data transfer remains challenging due to their dynamic nature. This paper proposes a Clustering-Based Ant Colony Optimization (CB-ACO) and Fuzzy Logic algorithm to address these issues. Clustering reduces network load and enhances stability, while ACO selects optimal cluster heads and routes, supported by Fuzzy Logic-based trust assessments for secure access control. Compared to existing algorithms, the proposed method improves packet delivery, reduces latency, and enhances security, offering a robust solution for next-generation VANETs.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Peer Review

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