

Chapter 9

A Survey on Clustering in Internet of Vehicles



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Abstract The current growth of the Internet of Vehicles (IoV) can be observed due to the ongoing advancements in communication technologies and AI methods. The concept has been very well embraced in the Intelligent Transportation Systems (ITS) to improve the functions of Vehicular Area Networks (VANETs) through the integration of Internet of Things (IoT). IoV has emerged as a key component in transportation networks because of its distinct features, such as changing topological configurations, extensive network dimensions, dependable internet connectivity, and substantial processing capabilities. Stable and efficient communication are the prerequisites for the IoV. Various challenges like concerning data-security, high levels of dynamism, frequent connectivity interruptions, and expected heavy traffic loads have to be addressed sufficiently well for the effective realization of IoV. To address these issues, vehicular clustering has been identified as an effective solution. Clustering is a core concept in IoV, where vehicles assemble based on shared characteristics. Among all the possibilities, the mobility-based clustering techniques are the most prevalent in IoV clustering; nonetheless, various clustering algorithms in IoV also employ machine learning and metaheuristic techniques. Some of these clustering algorithms merge machine learning with metaheuristic approaches to enhance the stability and efficiency of the clusters for establishing dependable communication. This study offers a comprehensive categorization of intelligence-based clustering algorithms, along with an examination of challenges and future prospects.

Keywords Clustering · IoT · IoV · VANET

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