

A Comprehensive Survey on the Convergence of Vehicular Social Networks and Fog Computing

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Abstract

In recent years, the number of IoT devices has been growing fast which leads to a challenging task for managing, storing, analyzing, and making decisions about raw data from different IoT devices, especially for delay-sensitive applications.

In a vehicular network (VANET) environment, the dynamic nature of vehicles makes the current open research issues even more challenging due to the frequent topology changes that can lead to disconnections between vehicles. To this end, a number of research works have been proposed in the context of cloud and fog computing over the 5G infrastructure.

On the other hand, there are a variety of research proposals that aim to extend the connection time between vehicles. Vehicular Social Networks (VSNs) have been defined to decrease the burden of connection time between the vehicles.

This survey paper first provides the necessary background information and definitions about fog, cloud and related paradigms such as 5G and SDN. Then, it introduces the reader to Vehicular Social Networks, the different metrics and the main differences between VSNs and Online Social Networks.

Finally, this survey investigates the related works in the context of VANETs that have demonstrated different architectures to address the different issues in fog computing. Moreover, it provides a categorization of the different approaches and discusses the required metrics in the context of fog and cloud and compares them to Vehicular social networks. A comparison of the relevant works is discussed along with new research challenges and trends in the domain of VSNs and fog computing.