SERVICE-ORIENTED ROUTING AND CLUSTERING STRATEGIES FOR VEHICLE INFOTAINMENT DISSEMINATION

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ABSTRACT. *The establishment of vehicle infotainment systems in heterogeneous vehicular networks needs to pay special attention to the distinctive network characteristic in wired/wireless networks, such as dynamic topology and less available bandwidth and the exploitation of the underutilized peers' resources to support large-scale services. This work proposes a service-oriented vehicle infotainment dissemination management scheme to ensure the satisfaction of varied requests' service requirements in heterogeneous vehicular communication. A novel group mobility-based clustering algorithm and a service-oriented routing mechanism that fits the distinct characteristics of heterogeneous vehicular networks are proposed to enhance the quality of communication. A series of experiments was conducted and the experimental results exhibit the effectiveness and practicability of the proposed work.*
Keywords: Vehicular infotainment, Clustering, Group mobility, Heterogeneous vehicular network, Service-oriented routing

1. **Introduction.** Recent advances in wireless inter-vehicle communication systems have enabled the establishment of vehicular ad-hoc networks (VANET) and have created significant opportunities for the deployment of a wide variety of applications and services for vehicles. The large-scale media streaming is either collected or disseminated from two ways, that is, vehicle to road base station (V2R) or vehicle to vehicle (V2V). Routing algorithms have been a challenge issue in a VANET due to the quick change of network topology. There are several representative routing protocols for VANET in the literature. The algorithm proposed in [1] improved the packet delivery rate by grouping the vehicles based on the distance between neighboring vehicles. However, merely taking the distance between vehicles into consideration might be a mistaken judgment. For instance, two vehicles will be assigned into one group while the two vehicles move in the opposite direction on the road, and get close to each other within a short period of time. The regrouping inevitably occurs frequently when two vehicles move away from each other. Vehicles are grouped according to their moving directions in [2]. The authors claimed that this kind of grouping ensures that vehicles in the same group are more likely to