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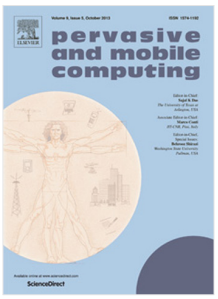

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Cooperative data forwarding based on crowdsourcing in vehicular social networks

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Abstract

The mobile crowdsourcing capabilities of commuters in Vehicular Social Networks (VSNs) can provide promising solutions to several challenges of today's smart cities, such as traffic congestion control, traffic management, smart parking, and route recommendation. In VSNs, mobile crowdsourcing depends upon the cooperative data forwarding behavior of nodes. In most of the existing data forwarding protocols designed for VSNs and delay tolerant networks (DTNs), it is assumed that nodes actively participate and are fully cooperative to relay data for others. In the real world, the selfish behavior of nodes considerably degrades the performance of these protocols. The reason is those selfish nodes only cooperate to relay data for nodes with whom they have strong social ties or mutual interest. In this paper, we present a Cooperative Data Forwarding (CDF) mechanism to stimulate the selfish nodes to participate in data forwarding. To enhance data forwarding mechanism, CDF is based on a socially-aware routing mechanism and a cooperative algorithm using direct observations and mobile crowdsourcing information to stimulate selfish nodes to participate in data forwarding. Besides, CDF is a multi-hop single copy forwarding mecha-

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