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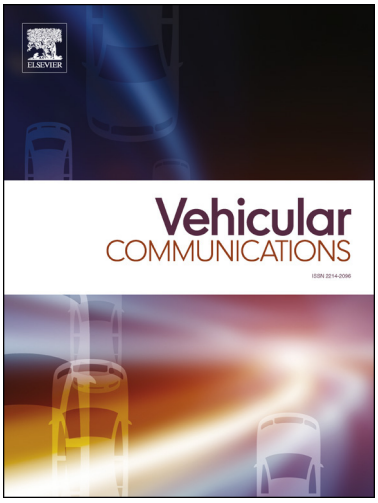

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Social Networking-based Cooperation Mechanisms in Vehicular Ad-Hoc Network- A Survey

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***Abstract*-**Vehicular Ad-hoc Network (VANET) is a sub-class of Mobile Ad-hoc Networks (MANETs) where it is built up by moving vehicles. VANET is getting increasingly popular in traffic management especially in some of the developed countries. It can be categorized into safety related application where it can save thousands of lives daily and non-safety application for commercial purpose. Due to its unpredictable mobility and intermittent network connectivity, a reliable end-to-end path between source and destination is almost impossible and hence ad hoc routing protocols are applied in VANET. However, the biggest challenge in VANET is not the routing issue, but the cooperation between the nodes. Even the best routing protocol will not be useful when the nodes do not participate in forwarding the data. In this paper, we have presented a comprehensive review on existing cooperation mechanisms in VANETs; particularly, those that have built upon mobile social networking. First, we explore the existing challenges in VANET. Next, we discuss a taxonomy for existing cooperation mechanisms in VANETs and review the proposed solutions of each cooperation type. Moreover, we explain the cooperation solutions that can be applied from the concept of Mobile Social Networking. Finally, we come up with a conclusion that the concept of Mobile Social Networking could complement the traditional VANET cooperation mechanisms to stimulate node cooperation. The future research direction in VANET cooperation has been discussed as well.

Keywords: Vehicular Ad-hoc Network; Cooperation Mechanism; Mobile social Networking

1. INTRODUCTION

VANET is a type of MANET where the nodes are usually referred to the vehicles. Although VANET shares some of the common behaviours of MANET, however, the primary difference between MANET and VANET is that the nodes in VANET are not limited to resources such as energy, computational power and memory [1]. It plays a very important role in today's technologically advanced traffic management approach, for example, Intelligent Transportation System (ITS). In the modern day, government agencies and institutes across the world have been putting in a lot of efforts realizing the concept of VANET in a wide scale, especially in accident avoidance to promote road safety.

A special type of wireless technology has been developed for VANET. The IEEE 1609 (WAVE) working group has been developing the architecture for the lower layers of the protocol stack for VANET, whereas the foundation of the IEEE 1609 family standard - the IEEE 802.11p standard defines the medium access control and physical layers