ABSTRACT

The efficient distribution of intelligent transport system (ITS) messages is fundamental for the deployment and acceptance of ITS applications by mobile network operators and the automotive industry. In particular, the distribution of road hazard warning (RHW) messages to distant vehicles requires special mechanisms. In this case, the combination of direct communication between vehicles and the wide area coverage provided by cellular networks might be crucial not only for reducing the data transmission costs but also for improving the timeliness of ITS information. Moreover, the application of clustering and cluster head selection mechanisms among vehicles can increase the efficiency of hybrid vehicular and cellular communication networks. A novel cluster head selection technique for the distribution of RHW messages, and proposes an implementation of another legacy technique that was originally intended for mobile ad-hoc networks (MANETs). It evaluates the performance of these techniques by the means of computer simulations in two scenarios with distinct congestion and propagation conditions. ITS shows the potential benefit of hybrid networks compared with pure cellular transmissions.

Index Terms—Intelligent transport systems, road hazard warnings, cluster head selection.

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