Enhanced Routing for an Intermittently Connected Mobile Vehicular Network and Wireless Intelligent Sensing System

Tianle Zhang
School of Computer Science and Technology
Beijing University of Posts and Telecommunications, Beijing, China

Consolidated and ubiquitous travel information availability is key to intelligent transport systems (ITS). However, it is expensive for fixed infrastructure based on wireless networks to provide total coverage and offer ubiquitous communication capacity. The Vehicular ad hoc Network (VANET) emerges as an alternative that can leverage mobile nodes to bridge the gap between information isolated islands often existing in mobile and wireless networks. The low duty cycle activity of nodes and links in VANET may destroy the connectivity of the VANET network. This paper proposes a new routing protocol and Ubiquitous Query for Travel Information (UQTI) system over a Mobile Relay Network (MRN) to facilitate needed information access for drivers on the road. The ubiquitous service is introduced and the performance of successful information queries is evaluated based on the computing model and network simulation. The results of the evaluation and the real experience of the UQTI service validate the feasibility of MRN-based network communication.

Keywords: vehicular ad hoc network, intelligent transport system; travel information; connectivity availability; partially connected