Dummy-Based Location Privacy Protection in Geographic Routing for VANETs

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Abstract

By exploiting location information, geographic routing provides superior scalability compared to traditional routing protocols in vehicular ad hoc networks (VANETs). However, location information shared among nodes will compromise user’s location privacy. Existing solutions to this problem include hiding user’s location and identification information in routing protocols, which drastically reduce network performance. To address this issue, we proposed a dummy based location privacy protection (DBLPP) routing protocol, in which routing decision is made based upon the dummy DOD (distance to the destination) information instead of users’ true locations. To measure the performance of location privacy protection of DBLPP, we proposed a novel entropy based location privacy protection metric. Our protocol is compared to existing solutions by simulations; results show that DBLPP provides a higher level of location privacy protection while maintaining similar network performance as other routing protocols.

Bio

Qing Yang received his B.E. and M.E. degree in computer science and technology from Nankai University (China) and Harbin Institute of Technology (China) in 2003 and 2005, respectively. He is currently a Ph.D candidate in the Department of Computer Science and Software Engineering, Auburn University. He is a student member of IEEE and ACM, and has been a Vodafone Fellow from 2005 to 2008. Currently, he is a Research Assistant under Dr. Alvin Lim. His research interests include target tracking in distributed sensor networks, routing in vehicular networks (VANET) and real-time embedding systems.