Abstract

Most recent VANETs routing protocols have neither taken into consideration security aspects nor the available resources at the mobile node. In this research, a security-aware road-side routing protocol with resource estimation methodology (SRSR_RE) for VANETs in a segmented road topology was proposed. The proposed algorithm was modelled by a distributed multi-agent system and to be installed at each road-side base-unit (RSU). The algorithm combines a congestion control unit that adopts a resource estimation mechanism with a secure-route discovery scheme. By such combination, both security and quality-of-service (QoS) requirements are guaranteed, and thus making our VANET robust against security threats besides protecting it from being congested. Compared to the insecure road-side (IRSR) and secure road-side (SRSR) protocols, extensive simulation results show the highest capability of the proposed protocol (SRSR_RE) in maximizing the secure delivery of the data packets and minimizing the end-to-end delays for VANETs with different network’s factors such as nodes density, number of malicious nodes and node’s buffer size.
References


Index Terms

Computer Science
Security

Keywords

Keywords Routing, Security, Agents, Distributed Systems, VANETs, QoS, Resource Estimation, ITS, Road Segmentation, Security Threats.