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Secure and Energy Efficient Routing in VANETs using Nature Inspired Hybrid Optimization

Gurjot Kaur

Research Scholar, Department of Electronics and Communication Engineering
Dr. B.R. Ambedkar NIT Jalandhar.

Abstract—Ensuring security in Vehicular Ad-hoc Networks (VANETs) has emerged as the prominent requisite prior to its deployment. Due to their open ended dynamic nature, VANETs are prone to multiple security attacks that can be mitigated using lightweight security solutions based on trust models. There is a trade-off between accuracy and delay in making a decision via trust based models. In a scenario, where the behavior of the node can be estimated by its performance in the network, artificial intelligence models have proved to be most promising in terms of accuracy and fast decision making with appropriate adaptation of the environment. Thus, in this study, we propose the combination of two nature inspired algorithms, Aquila optimization and Remora optimization to select an optimal routing path based on higher trust, higher energy efficiency and lesser delay. The performance of the hybrid combination of the proposed algorithm is compared with the individual algorithms.