

A genetic algorithm for management of coding resources in VANET

ABSTRACT

This project aims to improve the throughput, energy consumption and overhead of vehicular ad hoc network (VANET) by optimising the network coding (NC) using Genetic Algorithm (GA). VANET shows a promising technology as it could enhance the traffic efficiency and promote traffic safety on the road systems. The conventional store-and-forward transmission protocol used in the intermediate node(s) simply stores the received packet and then send at a later time to the destination. However, the rapid changing in VANET topology has made the conventional store-and-forward approach inefficient to meet the throughput and reliability demand posed by VANET. Hence, NC is proposed to perform additional functions on the packet in the source or intermediate node(s). However, the chances to perform NC in wireless network is highly unlikely if the packet is not transmit to the potential NC node. Therefore, GA based network routing (GANeR) is embedded into network to search for shortest path from the source to the destination. It showed that the developed GANER in this work provides a better route with coding opportunities and reduces energy consumption in the network. The total energy consumed by GANER is 5.6% fewer than NC in wireless network transmission and forwarding structure (COPE).