

## QUANTITATIVE STUDY ON IMPACT OF STATIC/DYNAMIC SELFISHNESS ON NETWORK PERFORMANCE IN VANETS

### ABSTRACT

Vehicular ad hoc network is a kind of mobile ad hoc networks which provides wireless communication between vehicles. In most cases, multi-hop communication is needed, because of the limited range of wireless transmission. The multi-hop communication among nodes strictly relies on the forwarding functionality of intermediate nodes. Due to resource limitation, the intermediate nodes may exhibit selfishness and refuse to bear forwarding tasks for others. In this project, we defined two types of selfish nodes, namely static selfish nodes and dynamic selfish nodes. The impact of the two types of selfish nodes are quantitatively investigated from various aspects including mobilities, proportions, densities, and combinations. We conducted exhaustive simulations on an integrated simulation platform which consists of OMNeT++, SUMO, INET, and Veins. The static selfish nodes have more harmful impacts on the performance of vehicular ad hoc networks in terms of average packet delivery ratios and end-to-end delays. Moreover, the results also imply that the impact of node selfishness should be evaluated by a comprehensive consideration of mobilities, proportions, densities, and combinations of selfish nodes.