Abstract

In a Vehicular Ad Hoc Network (VANET), node cooperation in packet forwarding is required for the network to function properly. However, since nodes in this networks usually have limited resources, some selfish nodes might intend not to forward packets to save resources for their own use. To discourage such behaviour, we propose a reputation and plausibility verification based system to detect selfish nodes and isolate them. The trustworthiness of the messages are decided upon using sensors, decision making phase and the previous trust value of the node. In the proposed work, depending upon the kind of reputation information a source is attributed with a sender-based reputation level. Only if the event is thought to be prevalent, the trust opinion generator announces this event to the applications. First a node checks whether the event is in its own detection range. If not the decision is made on either the rule of majority or on the trust levels already assigned to the nodes. In case the event is not prevalent, the proposed algorithm also sends a malicious intent information packet in order to inform the neighbour nodes about the detection of a malicious activity. It is likely to be susceptible to more sophisticated attacks, such as collision attacks, because the situation-oriented reputation level
allows long-lasting groups of attackers to manipulate a node’s reputation database. The proposed algorithm is better equipped to handle such attacks. It can detect at least such attacks if the node is itself in the detection range. It eliminates attacks pertaining to false event generation completely by utilizing the plausibility of data collected through sensors as well as the trust value of the sending nodes. Reputation value based on mobility is contributed. If the neighbour is having high stability its reputation value is increased.

References

Index Terms

Computer Science

Networks

Keywords

VANET, selfish nodes, plausibility verification, reputation.