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ECM-GT: Design of efficient computational modelling based on game theoretical approach towards enhancing the security solutions in MANET (Article)

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Abstract

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Game Theory is a useful tool for exploring the issues concerning Mobile Ad-Hoc Network (or MANET) security. In MANETs, coordination among the portable nodes is more significant, which encompasses their vulnerability challenges to several security assaults and the inability to run securely, when storing its resources and manage secure routing between the nodes. Hence, it is imperative to design an efficient routing protocol to secure all nodes from unknown behaviors. In the current research study, the game -theory approach is utilized for analytical purpose and addresses the security problems in MANETs. The game -theoretic approach is mainly adopted to find the malicious activities in the networks. In the proposed work, a Bayesian-Signaling game model is proposed which analyses the behavior of both regular/normal and malicious nodes. The game model proposed also provides the finest actions of autonomous tactics for every node. A Bayesian-Equilibrium (BE) offers the best solution for games to resolve the incomplete information by joining strategies and players payoff which form an equilibrium. By exploiting the BE mechanism, the system can detect the behavior of regular as well as malicious nodes. Therefore, Efficient ComputationalModelling based on Game Theory or ECM-GT methodology will reduce the utility of malicious nodes and increase the utility of regular nodes. Also, it stimulates the best co-operation among the nodes by exploiting the reputation system. On comparing our results with the existing systems, it was found that the proposed algorithm performed better in the detection of malicious nodes, throughput, false positive rate and detection of attacks. © BEIESP.

Author keywords

Bayesian signaling model | Bayesian-Equilibrium | Game -Theory | MANETs | Secure routing protocol

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