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A Novel Multi-Agent and Multilayered Game Formulation for Intrusion Detection in Internet of Things (IoT) (Article) (Open Access)

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Abstract

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The current era of smart computing and enabling technologies encompasses the Internet of Things (IoT) as a network of connected, intelligent objects where objects range from sensors to smartphones and wearables. Here, nodes or objects cooperate during communication scenarios to accomplish effective throughput performance. Despite the deployment of large-scale infrastructure-based communications with faster access technologies, IoT communication layers can still be affected with security vulnerabilities if nodes/objects do not cooperate and intend to take advantage of other nodes for fulfilling their malevolent interest. Therefore, it is essential to formulate an intrusion detection/prevention system that can effectively identify the malicious node and restrict it from further communication activities-thus, the throughput, and energy performance can be maximized to a significant extent. This study introduces a combined multi-agent and multilayered game formulation where it incorporates a trust model to assess each node/object, which is participating in IoT communications from a security perspective. The experimental test scenarios are numerically evaluated, where it is observed that the proposed approach attains significantly improves intrusion detection accuracy, delay, and throughput performance as compared to the existing baseline approaches. © 2013 IEEE.

SciVal Topic Prominence

Topic: Mobile Ad Hoc Networks | Trust Management | Black Holes

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Author keywords

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Indexed keywords

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Engineering uncontrolled terms: Communication activities | Enabling technologies | Internet of thing (IOT) | Internet of Things (IOT) | Intrusion detection/prevention systems | Large scale infrastructures | Security vulnerabilities | Throughput performance

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