



The Trust Based Model for Intrusion Detection in IOT

Zakiya Manzoor Khan, Research Scholar, Department of Science and Engineering, Lovely Professional University

Abstract

The rapid growth of the Internet of Things (IoT) has enabled the interconnection of numerous smart devices, sensors, and systems, creating new opportunities for automation and intelligent services. However, the large-scale deployment of IoT devices also introduces significant security challenges, particularly unauthorized access, malicious activities, data manipulation, and network-based attacks. Traditional intrusion detection systems may face limitations in IoT environments due to resource constraints, heterogeneous devices, dynamic network conditions, and the increasing sophistication of cyberattacks. This study proposes a trust-based model for intrusion detection in IoT networks that evaluates the reliability and behaviour of connected devices. The proposed approach assigns trust values to IoT nodes based on factors such as communication behaviour, packet forwarding, interaction history, reliability, and detected anomalies. Devices exhibiting suspicious or malicious behaviour are assigned lower trust scores and can be isolated or subjected to additional security measures. The model aims to improve the detection of compromised and malicious nodes while reducing false alarms and unnecessary computational overhead. By continuously monitoring device behaviour and updating trust levels, the proposed framework can provide an adaptive and decentralized security mechanism suitable for dynamic IoT environments. The study highlights the potential of trust management as an additional layer of protection against various IoT attacks. The proposed model can contribute to improving network security, reliability, privacy, and resilience while maintaining efficient communication among legitimate IoT devices.

Keywords: Internet of Things (IoT), Intrusion Detection, Trust Management, Trust-Based Model, Network Security, Malicious Nodes, Anomaly Detection, Cybersecurity, IoT Security, Trust Evaluation.

