Federated Learning Throughput Scalability in Distributed IoT Malware Detection

Assignee Research

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Abstract

This report synthesises findings from 9 peer-reviewed papers addressing the following research question: What is the throughput scalability of federated learning frameworks like FEDetect when increasing the number of client devices in a distributed IoT malware detection setting. This work investigates the possibilities enabled by federated learning concerning IoT malware detection and studies security issues inherent to this new learning paradigm. In this context, a framework that uses federated learning to detect malware affecting IoT devices is. 6 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 2.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Federated Learning for Malware Detection in IoT Devices. Research question: What is the throughput scalability of federated learning frameworks like FEDetect when increasing the number of client devices in a distributed IoT malware detection setting?.

2 Methodology

Systematic literature search across multiple databases yielded 9 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 2.7/10.

3 Results

9 papers retrieved. 6 claims extracted; 0 independently verified. Quality review score: 2.7/10.

4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

5 Extracted Claims

Claim	Verified	Confidence
Federated Learning enables data privacy by design as data is not shared with any external identity.	×	0.10
FL approaches can be used in the IoT context to build joint models without sharing sensitive data.	×	0.07
FL approaches affect the performance of traditional anomaly detectors and classifiers in IoT scenarios.	×	0.07
The proposed framework covers both anomaly detection and classification approaches using multi-device datasets.	×	0.06
Model aggregation occurs after several iterations to create a global model from individual client models.	×	0.10
The framework achieves 95% accuracy in benign traffic classification in a centralized setting.	×	0.05

References

- `http://arxiv.org/abs/2104.09994v3`
- `http://arxiv.org/abs/2305.11236v1`
- `http://arxiv.org/abs/1906.09715v1`