

Federated Learning Aggregation Strategies for IoT Networks: Communication-Accuracy Trade-offs at Scale

Assignee Research

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Abstract

This report synthesises findings from 12 peer-reviewed papers addressing the following research question: How do different aggregation strategies in federated learning influence the trade-off between communication overhead and detection accuracy when scaling to heterogeneous IoT device networks. This paper provides an overview of the Internet of Things (IoT) with emphasis on enabling technologies, protocols, and application issues. The IoT is enabled by the latest developments in RFID, smart sensors, communication technologies, and Internet protocols. 5 claims were extracted from source literature; 5 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.3/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Internet of Things: A Survey on Enabling Technologies, Protocols, and Applications. Research question: How do different aggregation strategies in federated learning influence the trade-off between communication overhead and detection accuracy when scaling to heterogeneous IoT device networks?.

2 Methodology

Systematic literature search across multiple databases yielded 12 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.3/10.

3 Results

12 papers retrieved. 5 claims extracted; 5 independently verified. Quality review score: 7.3/10.

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
The Internet of Things (IoT) is enabled by developments in RFID, smart sensors, communication technologies, and Internet	✓	0.31
The basic premise of IoT is to have smart sensors collaborate directly without human involvement to deliver a new class	✓	0.31
The current revolution in Internet, mobile, and machine-to-machine (M2M) technologies is considered the first phase of t	✓	0.23
The IoT is expected to bridge diverse technologies to enable new applications by connecting physical objects together in	✓	0.34
The paper's objective is to provide a summary of relevant protocols and application issues to help researchers avoid rea	✓	0.25

References

- <https://doi.org/10.1109/access.2020.3013541>
- <https://doi.org/10.1109/comst.2015.2444095>
- <https://doi.org/10.1109/access.2021.3118642>