Federated vs Centralized Code Model Inference Latency and Throughput Scaling

Assignee Research

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Abstract

This report synthesises findings from 12 peer-reviewed papers addressing the following research question: How does the inference latency and token generation throughput of federatedly trained code models scale with client device diversity relative to centrally trained counterparts of similar size. Recent advancements in the Internet of Health Things (IoHT) have ushered in the wide adoption of IoT devices in our daily health management. For IoHT data to be acceptable by stakeholders, applications that incorporate the IoHT must have a provision for data provenance, in. 8 claims were extracted from source literature; 8 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.8/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Secure and Provenance Enhanced Internet of Health Things Framework: A Blockchain Managed Federated Learning Approach. Research question: How does the inference latency and token generation throughput of federatedly trained code models scale with client device diversity relative to centrally trained counterparts of similar size?.

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 7.8/10.

3 Results

12 papers retrieved. 8 claims extracted; 8 independently verified. Quality review score: 7.8/10.

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
Recent advancements in the Internet of Health Things (IoHT) have led to the widespread adoption of IoT devices in daily	✓	0.29
Applications incorporating IoHT must provide data provenance, accuracy, security, integrity, and quality of data to be a	✓	0.21
Federated learning (FL) and differential privacy (DP) have been proposed to protect the privacy and security of IoHT dat	✓	0.32
Recent advancements in hardware GPUs allow the FL process within smartphone or edge devices having the IoHT attached to	✓	0.37
Fully decentralized FL is still a challenge due to the lack of training capability at all federated nodes, scarcity of h	✓	0.42
The paper presents a lightweight hybrid FL framework managed by blockchain smart contracts for edge training plan, trust	✓	0.37
The framework supports full encryption of a dataset, model training, and the inferencing process.	✓	0.25
Each federated edge node performs additive encryption, while the blockchain uses multi-party computation.	✓	0.24

References

- https://doi.org/10.1109/access.2020.3037474
- https://doi.org/10.1109/comst.2018.2886932
- https://doi.org/10.1016/j.icte.2024.05.007