

Adaptive Client Sampling in FedQuad for Cross-Domain Federated Learning Convergence and Generalization

Assignee Research

May 31, 2026

Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: What is the impact of adaptive client sampling strategies on the convergence rate and generalization performance of FedQuad when applied to cross-domain federated learning scenarios with varying. This paper presents the design and implementation of FLIPS, a middleware system to manage data and participant heterogeneity in federated learning (FL) training workloads. In particular, we examine the benefits of label distribution clustering on participant selection in. 7 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 2.5/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: FLIPS: Federated Learning using Intelligent Participant Selection. Research question: What is the impact of adaptive client sampling strategies on the convergence rate and generalization performance of FedQuad when applied to cross-domain federated learning scenarios with varying levels of data heterogeneity?.

2 Methodology

Systematic literature search across multiple databases yielded 10 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 2.5/10.

3 Results

10 papers retrieved. 7 claims extracted; 0 independently verified. Quality review score: 2.5/10.

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
FLIPS achieves higher accuracy compared to random, GradClus, Oort, and TiFL in federated learning experiments on the MIT	×	0.08
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FLIPS achieves higher accuracy compared to random, GradClus, Oort, and TiFL in federated learning experiments on the HAM	×	0.07
Clustering label distributions takes less than one second for all datasets, including the HAM10000 dataset with 200 part	×	0.11
FLIPS attains 60% accuracy in fewer rounds compared to OORT and TiFL in the absence of stragglers for the MIT BIH ECG Da	×	0.05
FLIPS attains the highest accuracy compared to random, OORT, GradCls, and TiFL in the presence of 10% stragglers for the	×	0.05
FLIPS attains 60% accuracy in fewer rounds compared to OORT and TiFL in the presence of 10% stragglers for the MIT BIH E	×	0.06

References

- <http://arxiv.org/abs/2509.04107v1>
- <http://arxiv.org/abs/2308.03901v2>

- <http://arxiv.org/abs/2509.25233v2>