

# Scaling Federated Clients in Graph Learning with Prototype and Traditional Embeddings

Assignee Research

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## Abstract

This report synthesises findings from 2 peer-reviewed papers addressing the following research question: What is the effect of varying the number of federated clients on the convergence speed and inference latency of federated graph learning models using prototype-based embeddings versus traditional. Federated graph learning (FGL) is a promising distributed training paradigm for graph neural networks across multiple local systems without direct data sharing. This approach inherently involves large-scale distributed graph processing, which closely aligns with the challenges. 10 claims were extracted from source literature; 7 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.4/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: OpenFGL: A Comprehensive Benchmark for Federated Graph Learning. Research question: What is the effect of varying the number of federated clients on the convergence speed and inference latency of federated graph learning models using prototype-based embeddings versus traditional embeddings, evaluated using training loss and inference time on the Cora and Citeseer benchmarks?.

## 2 Methodology

Systematic literature search across multiple databases yielded 2 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.4/10.

### 3 Results

2 papers retrieved. 10 claims extracted; 7 independently verified. Quality review score: 7.4/10.

### 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
OpenFGL is a unified benchmark designed for the primary FGL scenarios: Graph-FL and Subgraph-FL.	✓	0.28
OpenFGL includes 42 graph datasets.	✓	0.16
The 42 graph datasets in OpenFGL are sourced from 18 application domains.	✓	0.15
OpenFGL includes 8 federated data simulation strategies.	✓	0.18
The 8 federated data simulation strategies in OpenFGL emphasize different graph properties.	✓	0.22
OpenFGL includes 5 graph-based downstream tasks.	✓	0.19
OpenFGL offers 18 recently proposed SOTA FGL algorithms.	✓	0.21
OpenFGL provides a user-friendly API for the included FGL algorithms.	×	0.12
Empirical results from OpenFGL demonstrate the capabilities of FGL.	×	0.15
Empirical results from OpenFGL highlight potential limitations of FGL.	×	0.11

### References

- <https://openalex.org/W7140347077>
- <https://doi.org/10.48550/arxiv.2408.16288>