

How does dynamic rank allocation in federated LoRA affect convergence speed and final accuracy on the SuperGLUE WSC and ReCoRD

Assignee Research

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Abstract

Graph neural networks (GNNs) have attracted extensive research attention in recent years due to their capability to progress with graph data and have been widely used in practical applications. As societies become increasingly concerned with the need for data privacy protection, GNNs face the need to adapt to this new normal. Besides, as clients in federated learning (FL) may have relationships, more powerful tools are required to utilize such implicit information to boost performance. This has led to the rapid development of the emerging research field of federated GNNs (FedGNNs). This promis

1 Introduction

This paper examines: Federated Graph Neural Networks: Overview, Techniques, and Challenges. Research question: How does dynamic rank allocation in federated LoRA affect convergence speed and final accuracy on the SuperGLUE WSC and ReCoRD tasks under extreme client data heterogeneity compared to static rank strategies?.

2 Methodology

Systematic literature search across multiple databases yielded 8 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 9.0/10.

3 Results

8 papers retrieved. 8 claims extracted; 8 independently verified. Quality review score: 9.0/10.

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
Graph neural networks (GNNs) have attracted extensive research attention in recent years due to their capability to prog	✓	0.40
As societies become increasingly concerned with the need for data privacy protection, GNNs face the need to adapt to thi	✓	0.31
Clients in federated learning (FL) may have relationships, and more powerful tools are required to utilize such implicit	✓	0.31
This has led to the rapid development of the emerging research field of federated GNNs (FedGNNs).	✓	0.30
This promising interdisciplinary field is highly challenging for interested researchers to grasp.	✓	0.25
The lack of an insightful survey on this topic further exacerbates the entry difficulty.	✓	0.23
We propose a 2-D taxonomy of the FedGNN literature: 1) the main taxonomy provides a clear perspective on the integration	✓	0.49
Through discussions of key ideas, challenges, and limitations of existing works, we envision future research directions	✓	0.39

References

- <https://doi.org/10.1109/comst.2023.3330910>
- <https://doi.org/10.48550/arxiv.1909.11875>
- <https://doi.org/10.1109/tnnls.2024.3360429>