LightGCL vs. SGL and GCA: Inference Efficiency at Scale in Graph-Based Recommendation

Assignee Research

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Abstract

This report synthesises findings from 2 peer-reviewed papers addressing the following research question: How does the inference efficiency of LightGCL compare to SGL and GCA when scaling to large-scale recommendation datasets like Amazon-1M and MovieLens-20M in terms of runtime and memory usage. In recent years, deep learning on graphs has achieved remarkable success in various domains. However, the reliance on annotated graph data remains a significant bottleneck due to its prohibitive cost and time-intensive nature. 7 claims were extracted from source literature; 7 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Towards Graph Contrastive Learning: A Survey and Beyond. Research question: How does the inference efficiency of LightGCL compare to SGL and GCA when scaling to large-scale recommendation datasets like Amazon-1M and MovieLens-20M in terms of runtime and memory usage?.

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 8.2/10.

3 Results

2 papers retrieved. 7 claims extracted; 7 independently verified. Quality review score: 8.2/10.

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
Deep learning on graphs has achieved remarkable success in various domains in recent years.	✓	0.27
The reliance on annotated graph data is a significant bottleneck due to its prohibitive cost and time-intensive nature.	✓	0.29
Self-supervised learning (SSL) on graphs enables machine learning models to produce informative representations from unl	✓	0.35
Graph Contrastive Learning (GCL) has not been thoroughly investigated in the existing literature prior to this survey.	✓	0.26
The survey provides an overview of GCL fundamental principles including data augmentation strategies, contrastive modes,	✓	0.27
The survey explores extensions of GCL to weakly supervised learning, transfer learning, and related scenarios.	✓	0.23
Practical applications of GCL discussed include drug discovery, genomics analysis, and recommender systems.	✓	0.19

References

- https://doi.org/10.48550/arxiv.2403.16137
- https://doi.org/10.48550/arxiv.2405.11868