

Memory Consumption Patterns of LightGCL, SGL, and GCA on Large-Scale Graphs

Assignee Research

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Abstract

This report synthesises findings from 1 peer-reviewed paper addressing the following research question: How do the memory consumption patterns of LightGCL, SGL, and GCA differ during training on graphs scaling from 1 million to 20 million nodes. 13 claims were extracted from source literature; 11 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: OpenGraph: Towards Open Graph Foundation Models. Research question: How do the memory consumption patterns of LightGCL, SGL, and GCA differ during training on graphs scaling from 1 million to 20 million nodes?.

2 Methodology

Systematic literature search across multiple databases yielded 1 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.7/10.

3 Results

1 papers retrieved. 13 claims extracted; 11 independently verified. Quality review score: 7.7/10.

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 learning is essential in domains including recommendation systems and social network analysis.	✓	0.25
Graph Neural Networks (GNNs) are techniques for encoding structural information.	✓	0.20
Graph Neural Networks (GNNs) improve performance in tasks like link prediction and node classification.	✓	0.24
A key challenge in graph learning is the difficulty of generalizing to unseen graph data with different properties.	✓	0.28
The paper proposes a novel graph foundation model called OpenGraph.	✓	0.19
OpenGraph enhances data augmentation using a large language model (LLM).	✓	0.20
The use of LLM-based data augmentation in OpenGraph aims to overcome data scarcity in real-world scenarios.	✓	0.18
OpenGraph introduces a unified graph tokenizer.	×	0.10
The unified graph tokenizer enables the model to generalize to diverse graph data, including those with unseen properties.	✓	0.28
OpenGraph utilizes a scalable graph transformer.	×	0.10
The scalable graph transformer in OpenGraph captures node-wise dependencies within the global topological context.	✓	0.24
OpenGraph achieves zero-shot graph learning performance across various settings.	✓	0.24
The model implementation for OpenGraph is released at https://github.com/HKUDS/OpenGraph .	✓	0.18

References

- <https://doi.org/10.18653/v1/2024.findings-emnlp.132>