Impact of Graph Sparsity on Convergence Rates in LightGCL and Contrastive Learning Methods

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Abstract

This report synthesises findings from 8 peer-reviewed papers addressing the following research question: What is the impact of varying graph sparsity levels on the convergence rate of LightGCL versus other contrastive learning methods in terms of training epochs required. Graph neural network (GNN) is a powerful learning approach for graph-based recommender systems. Recently, GNNs integrated with contrastive learning have shown superior performance in recommendation with their data augmentation schemes, aiming at dealing with highly sparse data. 0 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.5/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: LightGCL: Simple Yet Effective Graph Contrastive Learning for Recommendation. Research question: What is the impact of varying graph sparsity levels on the convergence rate of LightGCL versus other contrastive learning methods in terms of training epochs required?.

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 4.5/10.

3 Results

8 papers retrieved. 0 claims extracted; 0 independently verified. Quality review score: 4.5/10.

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.

References

- http://arxiv.org/abs/2206.07869v1
- http://arxiv.org/abs/2506.00048v1
- http://arxiv.org/abs/2302.08191v3