

LightGCL Performance in Cross-Domain Recommendation Under Extreme Data Sparsity

Assignee Research

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Abstract

This report synthesises findings from 2 peer-reviewed papers addressing the following research question: How does LightGCL perform in cross-domain recommendation tasks relative to SGL and GCA when evaluated on Recall@20 under extreme data sparsity. 10 claims were extracted from source literature; 10 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 9.0/10. 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: How does LightGCL perform in cross-domain recommendation tasks relative to SGL and GCA when evaluated on Recall@20 under extreme data sparsity?.

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 9.0/10.

3 Results

2 papers retrieved. 10 claims extracted; 10 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 network (GNN) is a powerful learning approach for graph-based recommender systems.	✓	0.30
GNNs integrated with contrastive learning have shown superior performance in recommendation with their data augmentation	✓	0.38
Most existing graph contrastive learning methods either perform stochastic augmentation (e.g., node/edge perturbation) o	✓	0.47
These methods cannot well preserve the intrinsic semantic structures and are easily biased by the noise perturbation.	✓	0.26
LightGCL mitigates issues impairing the generality and robustness of CL-based recommenders.	✓	0.26
LightGCL exclusively utilizes singular value decomposition for contrastive augmentation.	✓	0.24
LightGCL enables the unconstrained structural refinement with global collaborative relation modeling.	✓	0.23
Experiments conducted on several benchmark datasets demonstrate the significant improvement in performance of LightGCL o	✓	0.25
LightGCL shows superiority in robustness against data sparsity and popularity bias.	✓	0.17
The source code of LightGCL is available at https://github.com/HKUDS/LightGCL .	✓	0.21

References

- <https://doi.org/10.48550/arxiv.2312.16563>
- <https://doi.org/10.48550/arxiv.2302.08191>