Augmentation-Free Graph Contrastive Learning for Sparse Recommendation Data

Assignee Research

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Abstract

This report synthesises findings from 4 peer-reviewed papers addressing the following research question: What is the impact of XSimGCL's augmentation-free strategy on recommendation accuracy metrics like NDCG and Recall compared to heavy augmentation baselines under extreme data sparsity. 10 claims were extracted from source literature; 8 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.3/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: SIGformer: Sign-aware Graph Transformer for Recommendation. Research question: What is the impact of XSimGCL's augmentation-free strategy on recommendation accuracy metrics like NDCG and Recall compared to heavy augmentation baselines under extreme data sparsity?.

2 Methodology

Systematic literature search across multiple databases yielded 4 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.3/10.

3 Results

4 papers retrieved. 10 claims extracted; 8 independently verified. Quality review score: 7.3/10.

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
Most graph-based methods in recommender systems focus on positive user feedback while overlooking negative feedback.	✓	0.30
Integrating both positive and negative feedback to form a signed graph can lead to a more comprehensive understanding of	✓	0.38
Existing efforts to incorporate both positive and negative feedback are sparse.	✓	0.25
Existing methods process positive and negative feedback separately, failing to holistically leverage collaborative infor	✓	0.31
Existing methods rely on MLPs or GNNs for information extraction from negative feedback.	✓	0.26
SIGformer employs the transformer architecture for sign-aware graph-based recommendation.	✓	0.34
SIGformer incorporates two innovative positional encodings that capture the spectral properties and path patterns of the	✓	0.35
SIGformer was evaluated across five real-world datasets.	×	0.13
SIGformer demonstrates superiority over state-of-the-art methods in experiments.	×	0.14
The code for SIGformer is available at https://github.com/StupidThree/SIGformer.	✓	0.21

References

- https://doi.org/10.1145/3637528.3671661
- https://doi.org/10.1145/3616855.3635854
- https://doi.org/10.1145/3626772.3657747