

Simplified Augmentation Pipelines in Graph Contrastive Learning Across Interaction Graph Sparsity

Assignee Research

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Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: Do simplified augmentation pipelines in graph contrastive learning maintain robust performance across different sparsity levels in interaction graphs when measured by HR and MAP compared to complex. Attributed graph clustering holds significant importance in modern data analysis. However, due to the complexity of graph data and the heterogeneity of node attributes, leveraging graph information for clustering remains challenging. 9 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.3/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: GCL-GCN: Graphormer and Contrastive Learning Enhanced Attributed Graph Clustering Network. Research question: Do simplified augmentation pipelines in graph contrastive learning maintain robust performance across different sparsity levels in interaction graphs when measured by HR and MAP compared to complex augmentation strategies?.

2 Methodology

Systematic literature search across multiple databases yielded 10 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 3.3/10.

3 Results

10 papers retrieved. 9 claims extracted; 0 independently verified. Quality review score: 3.3/10.

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
The GCL-GCN model uses a dual self-supervised tri-channel graph fusion network structure.	×	0.06
The GCL-GCN model includes a contrastive learning module, AE module, GCN module, Graphormer module, representation enhan	×	0.13
The input graph data's original feature matrix is fused with the feature matrix output by the contrastive learning	×	0.15
The fused feature matrix is passed through the GCN module and Graphormer module, generating representations () and (×	0.10
The AE module processes the original features of the graph data, outputting the representation () at the final layer o	×	0.06
The output representations from each encoder undergo a fusion operation to generate a new distribution .	×	0.02
A target distribution is obtained through soft assignment, and is utilized to guide the self-supervised clustering p	×	0.03
The GCL-GCN model optimizes the similarity between different distributions using the KL divergence.	×	0.05
The AE module employs a standard autoencoder structure composed of linear fully connected layers to extract representati	×	0.05

References

- <http://arxiv.org/abs/2505.15103v2>
- <http://arxiv.org/abs/2507.19095v2>
- <http://arxiv.org/abs/2302.02317v1>