

Multimodal Feature Fusion in Contrastive Self-Supervised Learning for Graph Anomaly Detection

Assignee Research

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Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: What is the impact of incorporating multimodal feature fusion in contrastive self-supervised learning frameworks on the AUC-ROC for anomaly detection in graphs with missing node attributes. Attribute graphs are ubiquitous in multimedia applications, and graph representation learning (GRL) has been successful in analyzing attribute graph data. However, incomplete graph data and missing node attributes can have a negative impact on media knowledge discovery. 8 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.5/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: AmGCL: Feature Imputation of Attribute Missing Graph via Self-supervised Contrastive Learning. Research question: What is the impact of incorporating multimodal feature fusion in contrastive self-supervised learning frameworks on the AUC-ROC for anomaly detection in graphs with missing node attributes?.

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 3.5/10.

3 Results

10 papers retrieved. 8 claims extracted; 0 independently verified. Quality review score: 3.5/10.

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.

5 Extracted Claims

Claim	Verified	Confidence
The reconstruction loss, which employs Dirichlet energy minimisation, measures the difference between the reconstructed	×	0.07
The objective of the reconstruction loss is to minimize the reconstruction error of the network, so that the learned fea	×	0.06
The mean squared error (MSE) is employed as the loss function between the online network and the reconstructor.	×	0.02
The comprehensive loss function is represented as $L = L_{rec} + \lambda L_{fcl}$, where λ is the hyperparameter that controls the weig	×	0.03
The Cora dataset is a widely used benchmark for evaluating the performance of graph-based machine learning algorithms.	×	0.08
The CiteSeer dataset is a digital library and search engine.	×	0.02
Graph neural network-based methods such as GCN and GAT allow for the direct inclusion of missing values during training	×	0.07
Recent research has explored using generative GNN-based learning, which assumes latent variables for missing attribute f	×	0.09

References

- <http://arxiv.org/abs/2206.07869v1>
- <http://arxiv.org/abs/2305.03741v1>
- <http://arxiv.org/abs/2103.00113v2>