

# Self-Supervised vs. Supervised Graph Anomaly Detection Under Feature Masking

Assignee Research

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## Abstract

This report synthesises findings from 4 peer-reviewed papers addressing the following research question: How do self-supervised graph anomaly detection methods compare to supervised baselines in robustness when 20% of node features are masked on Amazon and Yelp datasets. Graph anomaly detection (GAD) suffers from heterophily — abnormal nodes are sparse so that they are connected to vast normal nodes. The current solutions upon Graph Neural Networks (GNNs) blindly smooth the representation of neighboring nodes, thus undermining the discriminative. 6 claims were extracted from source literature; 5 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.5/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: Addressing Heterophily in Graph Anomaly Detection: A Perspective of Graph Spectrum. Research question: How do self-supervised graph anomaly detection methods compare to supervised baselines in robustness when 20% of node features are masked on Amazon and Yelp datasets?.

## 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 7.5/10.

### 3 Results

4 papers retrieved. 6 claims extracted; 5 independently verified. Quality review score: 7.5/10.

### 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
Graph anomaly detection (GAD) suffers from heterophily where abnormal nodes are sparse and connected to vast normal node	✓	0.50
Current Graph Neural Network (GNN) solutions for GAD smooth the representation of neighboring nodes.	✓	0.18
Smoothing neighboring node representations in GNNs undermines the discriminative information of anomalies.	×	0.12
Recent studies address heterophily by identifying and discarding inter-class edges through estimating and comparing node	✓	0.32
The representation of a single node can be misleading when the prediction error is high.	✓	0.30
Misleading single-node representations due to high prediction error hinder the performance of the edge indicator.	✓	0.21

### References

- <https://doi.org/10.1145/3159652.3159726>
- <https://doi.org/10.1145/3543507.3583268>
- <https://doi.org/10.1145/3543507.3583373>