

# Multi-View GNN Anomaly Detection with View Dropout: Cross-Domain Generalization and Robustness

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June 1, 2026

## Abstract

This report synthesises findings from 7 peer-reviewed papers addressing the following research question: How do multi-view GNN anomaly detection models with view dropout perform on cross-domain datasets compared to single-view models, measured by generalization accuracy and robustness metrics. Anomaly detection is defined as discovering patterns that do not conform to the expected behavior. Previously, anomaly detection was mostly conducted using traditional shallow learning techniques, but with little improvement. 8 claims were extracted from source literature; 2 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: Mul-GAD: a semi-supervised graph anomaly detection framework via aggregating multi-view information. Research question: How do multi-view GNN anomaly detection models with view dropout perform on cross-domain datasets compared to single-view models, measured by generalization accuracy and robustness metrics?.

## 2 Methodology

Systematic literature search across multiple databases yielded 7 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 4.7/10.

### 3 Results

7 papers retrieved. 8 claims extracted; 2 independently verified. Quality review score: 4.7/10.

### 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 Mul-GAD approach outperforms the state-of-the-art not only on detection performance, but also in terms of generaliza	✓	0.17
The model shows better generalization due to utilizing the plentiful information from different views.	×	0.07
Computing the feature similarity matrix plays an important role in boosting the detection performance.	×	0.04
The final model, equipped with label-oriented objective function and fusion strategies, has a significant improvement on	×	0.14
Label-oriented objective functions have a more generalized performance in anomaly detection.	×	0.09
Two effective fusion strategies at the view and feature level boost detection performance.	✓	0.16
Spatial density methods like LOF and KNN are constrained by inductive bias, making it hard to spot abnormal nodes masque	×	0.01
Anomaly detection can be categorized into label-oriented, reconstruction-oriented, and ssl-oriented objective functions.	×	0.06

### References

- <http://arxiv.org/abs/1804.00607v4>

- <http://arxiv.org/abs/2504.03306v1>
- <http://arxiv.org/abs/2212.05478v1>