Graph Anomaly Detection with Feature Masking Across Heterogeneous Domains

Assignee Research

May 31, 2026

Abstract

This report synthesises findings from 12 peer-reviewed papers addressing the following research question: Can graph anomaly detection models trained with feature masking generalize effectively across heterogeneous datasets like Amazon and Yelp without domain-specific fine-tuning. Graph anomaly detection attracts considerable interest across a variety of application domains, including fraud detection within social networks, identifying money laundering activities in transaction graphs, etc. The advent of Graph Neural Networks (GNNs) has enhanced existing. 13 claims were extracted from source literature; 11 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 6.5/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Graph Anomaly Detection with Domain-Agnostic Pre-Training and Few-Shot Adaptation. Research question: Can graph anomaly detection models trained with feature masking generalize effectively across heterogeneous datasets like Amazon and Yelp without domain-specific fine-tuning?.

2 Methodology

Systematic literature search across multiple databases yielded 12 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 6.5/10.

3 Results

12 papers retrieved. 13 claims extracted; 11 independently verified. Quality review score: 6.5/10.

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 is applied in domains such as fraud detection within social networks and identifying money laund	✓	0.27
The advent of Graph Neural Networks (GNNs) has enhanced existing deep learning methods to capture anomaly patterns in th	✓	0.32
The performance deficiency of current GNNs in graph anomaly detection is primarily caused by the scarce labeled anomalie	✓	0.31
Unsupervised approaches totally neglect valuable labeled anomalies.	✓	0.18
Supervised approaches in graph anomaly detection have the potential for overfitting.	✓	0.18
GUDI is a few-shot-oriented framework proposed in this paper.	×	0.15
GUDI is the first work to incorporate a self-supervised pre-training approach to capture general graph patterns across d	✓	0.33
GUDI designs a classifier with few-shot learning to model labeled data within a specific domain.	✓	0.24
The proposed guided diffusion mechanism in GUDI synthesizes the outcomes of the pre-trained model and the domain-specifi	✓	0.33
The guided diffusion mechanism in GUDI negates the need for fine-tuning the large pre-trained model.	✓	0.28
GUDI facilitates efficient domain adaptation.	×	0.11
GUDI retains the ability to uncover unknown anomalies through unsupervised pre-training.	✓	0.31
GUDI possesses the ability to identify known anomaly patterns from few-shot labels.	✓	0.21

References

- https://www.semanticscholar.org/paper/ea3dc3a4280eac63faf3d8a2c2994615a91fc001
- https://www.semanticscholar.org/paper/c45846b8324c7475291aec48de39c2a80e03ac3c
- https://www.semanticscholar.org/paper/ae05716d854846c3fd4912dec78f0206e38537ac