Impact of Labeled-Unlabeled Anomaly Ratios on GADT3 Detection in Multimodal Graphs

Assignee Research

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Abstract

This report synthesises findings from 4 peer-reviewed papers addressing the following research question: What is the impact of varying the ratio of labeled to unlabeled anomalies on the detection accuracy of GADT3 when applied to multimodal graph data. Detecting anomalies in data is a vital task, with numerous high-impact applications in areas such as security, finance, health care, and law enforcement. While numerous techniques have been developed in past years for spotting outliers and anomalies in unstructured collections. 11 claims were extracted from source literature; 9 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.9/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Graph-based Anomaly Detection and Description: A Survey. Research question: What is the impact of varying the ratio of labeled to unlabeled anomalies on the detection accuracy of GADT3 when applied to multimodal graph data?.

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 7.9/10.

3 Results

4 papers retrieved. 11 claims extracted; 9 independently verified. Quality review score: 7.9/10.

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
Detecting anomalies in data is a vital task, with numerous high-impact applications in areas such as security, finance,	✓	0.35
While numerous techniques have been developed in past years for spotting outliers and anomalies in unstructured collecti	✓	0.41
As objects in graphs have long-range correlations, a suite of novel technology has been developed for anomaly detection	✓	0.33
This survey aims to provide a general, comprehensive, and structured overview of the state-of-the-art methods for anomal	✓	0.36
We provide a comprehensive exploration of both data mining and machine learning algorithms for detection tasks.	✓	0.27
We give a general framework for the algorithms categorized under various settings: unsupervised vs. (semi-)supervised ap	✓	0.38
We highlight the effectiveness, scalability, generality, and robustness aspects of the methods.	✓	0.22
We stress the importance of anomaly attribution and highlight the major techniques that facilitate digging out the root	✓	0.34
We present several real-world applications of graph-based anomaly detection in diverse domains, including finance.	✓	0.29
There are many open challenges in the field of graph-based anomaly detection.	×	0.11
Graph-based anomaly detection methods can be categorized into structure-based and community-based approaches.	×	0.13

References

- http://arxiv.org/abs/2212.05478v1
- http://arxiv.org/abs/1404.4679v2
- http://arxiv.org/abs/2205.15508v1