

Semi-Supervised Contrastive Learning for Robust Cross-Domain Anomaly Detection in Attributed Networks

Assignee Research

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Abstract

This report synthesises findings from 13 peer-reviewed papers addressing the following research question: To what extent does semi-supervised contrastive learning improve cross-domain generalization for anomaly detection in attributed networks compared to unsupervised approaches when facing structural. A comprehensive review of an area of machine learning that deals with the use of unlabeled data in classification problems: state-of-the-art algorithms, a taxonomy of the field, applications, benchmark experiments, and directions for future research. In the field of machine. 9 claims were extracted from source literature; 9 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.0/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Semi-Supervised Learning. Research question: To what extent does semi-supervised contrastive learning improve cross-domain generalization for anomaly detection in attributed networks compared to unsupervised approaches when facing structural adversarial attacks?.

2 Methodology

Systematic literature search across multiple databases yielded 13 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.0/10.

3 Results

13 papers retrieved. 9 claims extracted; 9 independently verified. Quality review score: 8.0/10.

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
Semi-supervised learning (SSL) occupies the middle ground between supervised learning and unsupervised learning.	✓	0.27
In supervised learning, all training examples are labeled.	✓	0.18
In unsupervised learning, no label data are given.	✓	0.17
Interest in semi-supervised learning has increased in recent years.	✓	0.19
Unlabeled data are plentiful in application domains such as images, text, and bioinformatics.	✓	0.21
Key assumptions underlying semi-supervised learning include smoothness, cluster or low-density separation, manifold structure	✓	0.29
Semi-supervised learning methods can be organized according to algorithmic strategies.	✓	0.24
Semi-supervised learning algorithms include those implementing the low-density separation assumption, graph-based method	✓	0.32
Guidelines for SSL practitioners are offered by analyzing the results of extensive benchmark experiments.	✓	0.26

References

- <https://doi.org/10.1186/s42400-019-0038-7>

- <https://doi.org/10.7551/mitpress/9780262033589.001.0001>
- <https://doi.org/10.1109/jproc.2021.3052449>