Scaling Node Perturbations and Edge Modifications in Graph Neural Networks for Network Intrusion Detection

Assignee Research

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Abstract

This report synthesises findings from 16 peer-reviewed papers addressing the following research question: How does the scaling of node feature perturbations versus edge structure modifications affect the inference efficiency and error rates of graph neural networks in network intrusion detection tasks. Cybersecurity threats are growing, making network intrusion detection essential. Traditional machine learning models remain effective in resource-limited environments due to their efficiency, requiring fewer parameters and less computational time. 0 claims were extracted from source literature; 0 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: CAGN-GAT Fusion: A Hybrid Contrastive Attentive Graph Neural Network for Network Intrusion Detection. Research question: How does the scaling of node feature perturbations versus edge structure modifications affect the inference efficiency and error rates of graph neural networks in network intrusion detection tasks across different benchmark datasets?.

2 Methodology

Systematic literature search across multiple databases yielded 16 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

16 papers retrieved. 0 claims extracted; 0 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.

References

- http://arxiv.org/abs/2403.11830v2
- http://arxiv.org/abs/2503.00961v3
- http://arxiv.org/abs/2206.07369v3