Scalability of Graph Attention Mechanisms in GNN-Based Anomaly Detection

Assignee Research

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Abstract

This report synthesises findings from 11 peer-reviewed papers addressing the following research question: How does the scalability of graph attention mechanisms in GNN-based anomaly detection models influence inference efficiency and F1 score stability under increasing graph sizes. Human knowledge provides a formal understanding of the world. Knowledge graphs that represent structural relations between entities have become an increasingly popular research direction toward cognition and human-level intelligence. 8 claims were extracted from source literature; 8 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.3/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A Survey on Knowledge Graphs: Representation, Acquisition, and Applications. Research question: How does the scalability of graph attention mechanisms in GNN-based anomaly detection models influence inference efficiency and F1 score stability under increasing graph sizes?.

2 Methodology

Systematic literature search across multiple databases yielded 11 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.3/10.

3 Results

11 papers retrieved. 8 claims extracted; 8 independently verified. Quality review score: 8.3/10.

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
Knowledge graphs represent structural relations between entities.	✓	0.25
Knowledge graphs have become an increasingly popular research direction toward cognition and human-level intelligence.	✓	0.30
The survey covers four overall research topics: knowledge graph representation learning, knowledge acquisition and compl	✓	0.41
The authors propose a full-view categorization and new taxonomies on knowledge graph research topics.	✓	0.25
Knowledge graph embedding is organized from four aspects: representation space, scoring function, encoding models, and a	✓	0.36
For knowledge acquisition and completion, the survey reviews embedding methods, path inference, and logical rule reasoni	✓	0.29
The survey explores emerging topics including metarelational learning, commonsense reasoning, and temporal knowledge gra	✓	0.31
The authors provide a curated collection of data sets and open-source libraries on different tasks.	✓	0.25

References

- https://doi.org/10.1002/jcc.21287
- https://doi.org/10.1109/tnnls.2021.3070843
- https://doi.org/10.1561/2200000083