

# Lightweight Graph Contrastive Learning Rivals Multi-View Augmentation in Adversarial Robustness

Assignee Research

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## Abstract

This report synthesises findings from 4 peer-reviewed papers addressing the following research question: Do lightweight graph contrastive learning methods (e.g., those using single-view augmentations) achieve comparable adversarial robustness to complex multi-view augmentation pipelines when evaluated. Self-supervised learning (SSL) has been demonstrated to be effective in pre-training models that can be generalized to various downstream tasks. Graph Autoencoder (GAE), an increasingly popular SSL approach on graphs, has been widely explored to learn node representations. 8 claims were extracted from source literature; 7 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: S2GAE: Self-Supervised Graph Autoencoders are Generalizable Learners with Graph Masking. Research question: Do lightweight graph contrastive learning methods (e.g., those using single-view augmentations) achieve comparable adversarial robustness to complex multi-view augmentation pipelines when evaluated on downstream tasks such as node classification or link prediction on benchmark graphs like Amazon or Reddit?.

## 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 8.0/10.

### 3 Results

4 papers retrieved. 8 claims extracted; 7 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
Self-supervised learning (SSL) has been demonstrated to be effective in pre-training models that can be generalized to v	✓	0.31
Graph Autoencoder (GAE) is an increasingly popular SSL approach on graphs.	✓	0.26
Existing GAE methods could only perform well on link prediction tasks, while their performance on classification tasks i	✓	0.30
S2GAE can generalize well to both link prediction and classification scenarios, including node-level and graph-level tas	✓	0.31
S2GAE randomly masks a portion of edges and learns to reconstruct these missing edges with an effective masking strategy	✓	0.24
S2GAE could be regarded as an edge-level contrastive learning framework.	✓	0.22
S2GAE is validated on 21 benchmark datasets across link prediction and node & graph classification tasks.	✓	0.26
S2GAE shows superiority against state-of-the-art methods in the experiments.	×	0.05

### References

- <https://doi.org/10.1145/3624018>
- <https://doi.org/10.1145/3539597.3570404>

- <https://doi.org/10.1145/3534678.3539321>