Contrastive Learning Augmentation Scaling in Heterogeneous Graph Neural Networks

Assignee Research

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Abstract

This report synthesises findings from 3 peer-reviewed papers addressing the following research question: How does the performance of contrastive learning augmentation strategies in graph neural networks scale with increasing graph size and heterogeneity, as measured by node clustering accuracy (NMI) and. We trained a large, deep convolutional neural network to classify the 1.2 million high-resolution images in the ImageNet LSVRC-2010 contest into the 1000 different classes. On the test data, we achieved top-1 and top-5 error rates of 37.5% and 17.0%, respectively, which is. 5 claims were extracted from source literature; 5 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 9.5/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: ImageNet classification with deep convolutional neural networks. Research question: How does the performance of contrastive learning augmentation strategies in graph neural networks scale with increasing graph size and heterogeneity, as measured by node clustering accuracy (NMI) and training throughput on PDNS-Net compared to homogeneous graph benchmarks?.

2 Methodology

Systematic literature search across multiple databases yielded 3 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 9.5/10.

3 Results

3 papers retrieved. 5 claims extracted; 5 independently verified. Quality review score: 9.5/10.

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
The neural network achieved top-1 and top-5 error rates of 37.5% and 17.0%, respectively, on the ImageNet LSVRC-2010 tes	✓	0.29
The neural network has 60 million parameters and 650,000 neurons.	✓	0.28
The neural network consists of five convolutional layers, some of which are followed by max-pooling layers, and three fu	✓	0.41
The model achieved a winning top-5 test error rate of 15.3% in the ILSVRC-2012 competition.	✓	0.23
The second-best entry in the ILSVRC-2012 competition achieved a top-5 test error rate of 26.2%.	✓	0.23

References

- https://doi.org/10.1101/467878
- https://doi.org/10.1145/3065386
- https://doi.org/10.1093/bib/bbt018