Robustness of XSimGCL and Simple Graph Contrastive Learning to Adversarial Perturbations

Assignee Research

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Abstract

This report synthesises findings from 14 peer-reviewed papers addressing the following research question: What is the robustness of XSimGCL and other simple graph contrastive learning methods to adversarial perturbations in the user-item interaction graph, as measured by the change in NDCG scores. Multilayer neural networks trained with the back-propagation algorithm constitute the best example of a successful gradient based learning technique. Given an appropriate network architecture, gradient-based learning algorithms can be used to synthesize a complex decision. 8 claims were extracted from source literature; 8 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 9.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Gradient-based learning applied to document recognition. Research question: What is the robustness of XSimGCL and other simple graph contrastive learning methods to adversarial perturbations in the user-item interaction graph, as measured by the change in NDCG scores?.

2 Methodology

Systematic literature search across multiple databases yielded 14 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 9.2/10.

3 Results

14 papers retrieved. 8 claims extracted; 8 independently verified. Quality review score: 9.2/10.

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
Multilayer neural networks trained with the back-propagation algorithm constitute the best example of a successful gradi	✓	0.34
Gradient-based learning algorithms can be used to synthesize a complex decision surface that can classify high-dimension	✓	0.37
Convolutional neural networks, which are specifically designed to deal with the variability of 2D shapes, are shown to o	✓	0.34
Real-life document recognition systems are composed of multiple modules including field extraction, segmentation recogni	✓	0.34
Graph transformer networks (GTN) allow multimodule systems to be trained globally using gradient-based methods so as to	✓	0.34
Experiments demonstrate the advantage of global training and the flexibility of graph transformer networks.	✓	0.29
A graph transformer network for reading a bank cheque uses convolutional neural network character recognizers combined w	✓	0.41
The graph transformer network for reading a bank cheque is deployed commercially and reads several million cheques.	✓	0.26

References

- https://doi.org/10.1186/s40537-019-0197-0
- https://doi.org/10.1186/s40537-021-00444-8
- https://doi.org/10.1109/5.726791