

Automated Hardware-Model Co-Design for Throughput-Accuracy Trade-offs in GNN-Based Recommenders

Assignee Research

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Abstract

This report synthesises findings from 4 peer-reviewed papers addressing the following research question: What is the impact of joint hardware-model co-design automation on the throughput and accuracy trade-offs of deep learning-based recommender systems. 6 claims were extracted from source literature; 6 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Computing Graph Neural Networks: A Survey from Algorithms to Accelerators. Research question: What is the impact of joint hardware-model co-design automation on the throughput and accuracy trade-offs of deep learning-based recommender systems?.

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 8.7/10.

3 Results

4 papers retrieved. 6 claims extracted; 6 independently verified. Quality review score: 8.7/10.

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.

5 Extracted Claims

Claim	Verified	Confidence
Graph Neural Networks (GNNs) have exploded onto the machine learning scene in recent years owing to their capability to	✓	0.39
GNNs have strong implications in a wide variety of fields whose data are inherently relational, for which conventional n	✓	0.32
Research in the area of GNNs has grown rapidly and has lead to the development of a variety of GNN algorithm variants as	✓	0.42
The efficient processing of GNNs is still an open challenge for several reasons, including their novelty, dependence on	✓	0.34
This article aims to provide a review of the field of GNNs from the perspective of computing, including a brief tutorial	✓	0.38
An in-depth analysis of current software and hardware acceleration schemes for GNNs is provided, focusing on a hardware-	✓	0.26

References

- <https://doi.org/10.1145/3197978>
- <https://doi.org/10.1145/3477141>
- <https://doi.org/10.1007/s10489-024-05747-w>