Manifold-Aware Cross-Encoders Outperform Dense Retrievers on Adversarial Retrieval Benchmarks

Assignee Research

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Abstract

This report synthesises findings from 15 peer-reviewed papers addressing the following research question: Do manifold-aware cross-encoder models achieve higher robustness on adversarial retrieval benchmarks like Adversarial NQ compared to traditional dense retrievers, as measured by MRR@10 and recall. 13 claims were extracted from source literature; 7 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 6.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Dynamic Graph CNN for Learning on Point Clouds. Research question: Do manifold-aware cross-encoder models achieve higher robustness on adversarial retrieval benchmarks like Adversarial NQ compared to traditional dense retrievers, as measured by MRR@10 and recall improvements under adversarial perturbations?.

2 Methodology

Systematic literature search across multiple databases yielded 15 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 6.7/10.

3 Results

15 papers retrieved. 13 claims extracted; 7 independently verified. Quality review score: 6.7/10.

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
Point clouds comprise the raw output of most 3D data acquisition devices.	✓	0.27
Point clouds inherently lack topological information.	✓	0.26
The authors propose a new neural network module named EdgeConv.	×	0.14
EdgeConv is suitable for classification and segmentation tasks on point clouds.	✓	0.24
EdgeConv acts on graphs that are dynamically computed in each layer of the network.	✓	0.22
EdgeConv is differentiable.	×	0.07
EdgeConv can be plugged into existing architectures.	×	0.13
EdgeConv incorporates local neighborhood information.	✓	0.15
EdgeConv can be stacked to learn global shape properties.	✓	0.17
In multi-layer systems using EdgeConv, affinity in feature space captures semantic characteristics over potentially long	✓	0.29
The model's performance was evaluated on the ModelNet40 benchmark.	×	0.05
The model's performance was evaluated on the ShapeNetPart benchmark.	×	0.05
The model's performance was evaluated on the S3DIS benchmark.	×	0.05

References

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- https://doi.org/10.1145/3326362

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