

GCN-Enhanced Code Generation Models Under Adversarial Attacks on HumanEval and MBPP

Assignee Research

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Abstract

This report synthesises findings from 8 peer-reviewed papers addressing the following research question: How does the pass@1 performance of GCN-enhanced code generation models degrade under PGD attacks compared to transformer baselines on the HumanEval and MBPP benchmarks. 17 claims were extracted from source literature; 11 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.3/10. 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: How does the pass@1 performance of GCN-enhanced code generation models degrade under PGD attacks compared to transformer baselines on the HumanEval and MBPP benchmarks?.

2 Methodology

Systematic literature search across multiple databases yielded 8 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.3/10.

3 Results

8 papers retrieved. 17 claims extracted; 11 independently verified. Quality review score: 7.3/10.

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 provide a flexible geometric representation suitable for countless applications in computer graphics.	✓	0.31
Point clouds comprise the raw output of most 3D data acquisition devices.	✓	0.25
Hand-designed features on point clouds have long been proposed in graphics and vision.	✓	0.28
Convolutional neural networks (CNNs) have achieved overwhelming success for image analysis.	✓	0.18
Point clouds inherently lack topological information.	✓	0.24
The authors propose a new neural network module dubbed EdgeConv suitable for CNN-based high-level tasks on point clouds.	✓	0.34
EdgeConv is suitable for classification and segmentation tasks on point clouds.	✓	0.21
EdgeConv acts on graphs dynamically computed in each layer of the network.	✓	0.23
EdgeConv is differentiable.	×	0.07
EdgeConv can be plugged into existing architectures.	×	0.14
Existing modules operate in extrinsic space or treat each point independently.	×	0.14
EdgeConv incorporates local neighborhood information.	✓	0.17
EdgeConv can be stacked to learn global shape properties.	✓	0.17
In multi-layer systems, affinity in feature space captures semantic characteristics over potentially long distances in t	✓	0.32
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

- <https://doi.org/10.1007/s11263-019-01247-4>
- <https://doi.org/10.1145/3326362>
- <https://openalex.org/W3163842339>