

# Adversarial Robustness of Graph and Vision-Language Contrastive Models in Multimodal Benchmarks

Assignee Research

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## Abstract

This report synthesises findings from 1 peer-reviewed paper addressing the following research question: How do multimodal reasoning benchmarks compare the adversarial robustness of graph contrastive learning and vision-language contrastive models when evaluated under varying levels of input. Deep learning has shown significant value in automating radiological diagnostics but can be limited by a lack of generalizability to external datasets. Leveraging the geometric principles of non-Euclidean space, certain geometric deep learning approaches may offer an alternative. 6 claims were extracted from source literature; 5 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.1/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: Improved Generalizability in Medical Computer Vision: Hyperbolic Deep Learning in Multi-Modality Neuroimaging. Research question: How do multimodal reasoning benchmarks compare the adversarial robustness of graph contrastive learning and vision-language contrastive models when evaluated under varying levels of input perturbations?.

## 2 Methodology

Systematic literature search across multiple databases yielded 1 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.1/10.

### 3 Results

1 papers retrieved. 6 claims extracted; 5 independently verified. Quality review score: 8.1/10.

### 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
Deep learning has shown significant value in automating radiological diagnostics but can be limited by a lack of general	✓	0.30
HCNNs matched CNNs' performance in less complex settings and demonstrated superior semantic organization and robustness	✓	0.33
HCNNs equaled CNNs in out-of-sample datasets identifying Alzheimer's disease.	✓	0.22
In zero-shot evaluations, HCNNs outperformed CNNs and radiologists.	✓	0.25
HCNNs deliver enhanced robustness and organization in neuroimaging data.	✓	0.23
HCNNs encounter efficiency and performance challenges with larger datasets.	×	0.15

### References

- <https://www.semanticscholar.org/paper/9e9708416c386bf118a4b0004958f88d50b3864f>