Comparative Robustness of CodeT5 and GraphCodeBERT Against Adversarial Code 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 comparative robustness of CodeT5 versus GraphCodeBERT against adversarial code perturbations in vulnerability classification tasks measured by accuracy drop. 9 claims were extracted from source literature; 9 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Interpreting Black-Box Models: A Review on Explainable Artificial Intelligence. Research question: What is the comparative robustness of CodeT5 versus GraphCodeBERT against adversarial code perturbations in vulnerability classification tasks measured by accuracy drop?.

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 8.2/10.

3 Results

14 papers retrieved. 9 claims extracted; 9 independently verified. Quality review score: 8.2/10.

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
Recent years have seen a tremendous growth in Artificial Intelligence (AI)-based methodological development in a broad r	✓	0.33
Majority of these models are inherently complex and lacks explanations of the decision making process causing these mode	✓	0.36
One of the major bottlenecks to adopt such models in mission-critical application domains, such as banking, e-commerce,	✓	0.35
Due to the rapid proleferation of these AI models, explaining their learning and decision making process are getting har	✓	0.35
To reduce false negative and false positive outcomes of these back-box models, finding flaws in them is still difficult	✓	0.31
This study provides a comprehensive analysis of the explainable AI (XAI) models.	✓	0.28
The development of XAI is reviewed meticulously through careful selection and analysis of the current state-of-the-art o	✓	0.31
It also provides a comprehensive and in-depth evaluation of the XAI frameworks and their efficacy to serve as a starting	✓	0.32
It highlights emerging and critical issues.	✓	0.16

References

- https://doi.org/10.1007/s12559-023-10179-8
- https://doi.org/10.1007/s11263-019-01247-4
- https://doi.org/10.48550/arxiv.2301.02496