

Cross-Lingual Pretraining Effects on CodeT5 Zero-Shot Vulnerability Detection in Low-Resource Languages

Assignee Research

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Abstract

This report synthesises findings from 5 peer-reviewed papers addressing the following research question: How does cross-lingual pretraining affect CodeT5's zero-shot vulnerability detection F1 scores on CWE-200 for low-resource programming languages. 6 claims were extracted from source literature; 6 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: The Current Challenges of Software Engineering in the Era of Large Language Models. Research question: How does cross-lingual pretraining affect CodeT5's zero-shot vulnerability detection F1 scores on CWE-200 for low-resource programming languages?.

2 Methodology

Systematic literature search across multiple databases yielded 5 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

5 papers retrieved. 6 claims extracted; 6 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
Large language models (LLMs) have demonstrated an unprecedented capacity to understand, generate, and operate programmin	✓	0.27
LLMs can assist developers in completing a broad spectrum of software development activities, including software design,	✓	0.29
Integrating LLMs within the software engineering landscape (LLM4SE) has become a burgeoning trend.	✓	0.22
The paper aims to revisit the software development life cycle (SDLC) under LLMs and highlight challenges and opportuniti	✓	0.25
The discussion was held among more than 20 participants from academia and industry, specializing in fields such as softw	✓	0.33
The paper identifies 26 key challenges from seven aspects, including software requirement & design, coding assistance, t	✓	0.37

References

- <https://openalex.org/W7159547291>
- <https://doi.org/10.48550/arxiv.2405.01466>
- <https://doi.org/10.48550/arxiv.2412.14554>