

Few-Shot Learning and Prompt Engineering for Cross-Language Vulnerability Detection in Sub-10B Models

Assignee Research

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Abstract

This report synthesises findings from 16 peer-reviewed papers addressing the following research question: To what extent can few-shot learning or prompt engineering mitigate the domain transfer gap for sub-10B models fine-tuned on one language (e.g., Python) but evaluated on another (e.g., Java) in vulnerability detection tasks? 0 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 5.8/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Benchmarking Prompt Engineering Techniques for Secure Code Generation with GPT Models. Research question: To what extent can few-shot learning or prompt engineering mitigate the domain transfer gap for sub-10B models fine-tuned on one language (e.g., Python) but evaluated on another (e.g., Java) in vulnerability detection tasks?.

2 Methodology

Systematic literature search across multiple databases yielded 16 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 5.8/10.

3 Results

16 papers retrieved. 0 claims extracted; 0 independently verified. Quality review score: 5.8/10.

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.

References

- <http://arxiv.org/abs/2507.20019v1>
- <http://arxiv.org/abs/2502.06039v1>
- <http://arxiv.org/abs/2410.08355v3>