

Fine-Tuning Multilingual Code LLMs on Mixed-Language Corpora for Cross-Language Bug Detection

Assignee Research

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Abstract

This report synthesises findings from 7 peer-reviewed papers addressing the following research question: To what extent does fine-tuning sub-10B multilingual code LLMs on mixed-language corpora improve their accuracy in detecting cross-language bugs (CLBs) compared to single-language fine-tuning, as. 0 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 6.5/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Fine-Tuning Code Language Models to Detect Cross-Language Bugs. Research question: To what extent does fine-tuning sub-10B multilingual code LLMs on mixed-language corpora improve their accuracy in detecting cross-language bugs (CLBs) compared to single-language fine-tuning, as measured by precision-recall curves on a held-out CLB benchmark?.

2 Methodology

Systematic literature search across multiple databases yielded 7 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 6.5/10.

3 Results

7 papers retrieved. 0 claims extracted; 0 independently verified. Quality review score: 6.5/10.

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/2507.21954v2>
- <http://arxiv.org/abs/2407.07342v1>
- <http://arxiv.org/abs/2508.11281v3>