

Taxonomy-Aligned Fine-Tuning of Codestral for Zero-Shot Vulnerability Repair

Assignee Research

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Abstract

This report synthesises findings from 14 peer-reviewed papers addressing the following research question: How does fine-tuning Codestral on taxonomy-aligned vulnerability datasets affect zero-shot repair success rates on Big-Vul compared to fine-tuning on general code corpora. Within the realm of software engineering, specialized tasks on code, such as program repair, present unique challenges, necessitating fine-tuning Large language models (LLMs) to unlock state-of-the-art performance. Fine-tuning approaches proposed in the literature for LLMs on 0 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 1.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: MOREpair: Teaching LLMs to Repair Code via Multi-Objective Fine-tuning. Research question: How does fine-tuning Codestral on taxonomy-aligned vulnerability datasets affect zero-shot repair success rates on Big-Vul compared to fine-tuning on general code corpora?.

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 1.7/10.

3 Results

14 papers retrieved. 0 claims extracted; 0 independently verified. Quality review score: 1.7/10.

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/2411.07586v1>
- <http://arxiv.org/abs/2404.12636v4>
- <http://arxiv.org/abs/2312.10793v3>