

# Fine-Tuning Codestral on Taxonomy-Aligned Vulnerability Datasets for Code Repair Success

Assignee Research

May 30, 2026

## Abstract

This report synthesises findings from 15 peer-reviewed papers addressing the following research question: What is the impact of fine-tuning Codestral on taxonomy-aligned vulnerability datasets compared to general code datasets, as measured by repair success rates on the Big-Vul dataset and the SWCC. Context: Traditional software security analysis methods struggle to keep pace with the scale and complexity of modern codebases, requiring intelligent automation to detect, assess, and remediate vulnerabilities more efficiently and accurately. Objective: This paper explores the. 0 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.0/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: LLMs in Code Vulnerability Analysis: A Proof of Concept. Research question: What is the impact of fine-tuning Codestral on taxonomy-aligned vulnerability datasets compared to general code datasets, as measured by repair success rates on the Big-Vul dataset and the SWCC benchmark?.

## 2 Methodology

Systematic literature search across multiple databases yielded 15 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 3.0/10.

### **3 Results**

15 papers retrieved. 0 claims extracted; 0 independently verified. Quality review score: 3.0/10.

### **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/2304.11130v1>
- <http://arxiv.org/abs/2504.16584v1>
- <http://arxiv.org/abs/2601.08691v1>