Mixed Obfuscation Techniques and Detection Accuracy in Llama3 vs. Codestral on Big-Vul

Assignee Research

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Abstract

This report synthesises findings from 15 peer-reviewed papers addressing the following research question: What is the impact of mixed obfuscation techniques (e.g., combining variable renaming, control flow flattening, and dead code insertion) on the detection accuracy of Llama3 versus Codestral when. 9 claims were extracted from source literature; 9 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.5/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: An empirical analysis of vulnerability detection tools for solidity smart contracts. Research question: What is the impact of mixed obfuscation techniques (e.g., combining variable renaming, control flow flattening, and dead code insertion) on the detection accuracy of Llama3 versus Codestral when evaluated on the Big-Vul dataset?.

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 8.5/10.

3 Results

15 papers retrieved. 9 claims extracted; 9 independently verified. Quality review score: 8.5/10.

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.

5 Extracted Claims

Claim	Verified	Confidence
The SmartBugs 2.0 framework includes 20 analysis tools.	✓	0.22
The study used an annotated dataset of 2,182 instances manually annotated with line-level vulnerability labels.	✓	0.27
The evaluation highlights the detection effectiveness of tools in detecting various types of vulnerabilities, as categor	✓	0.32
The study evaluated the effectiveness of a Large Language Model-based detection method on two popular datasets.	✓	0.24
The study obtained inconsistent results with the two datasets, showing unreliable detection when analyzing real-world sm	✓	0.32
The study identified significant variations in the accuracy and reliability of different tools.	✓	0.19
The study demonstrates the advantages of combining multiple detection methods to improve vulnerability identification.	✓	0.24
The study identified a set of 3 tools that, combined, achieve up to 76.78% found vulnerabilities taking less than one mi	✓	0.28
The study contributes to the field by releasing the largest dataset of manually analyzed smart contracts with line-level	✓	0.38

References

- http://arxiv.org/abs/2505.15756v2
- http://arxiv.org/abs/2512.16538v1
- http://arxiv.org/abs/1806.05513v1