

# Synthetic Data Augmentation Impact on Sub-10B Model Code Security Benchmark Performance

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## Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: How does synthetic data augmentation affect the pass@1 performance of sub-10B models on cross-language code security benchmarks like SIMCOPILOTP. 0 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: SLM-Bench: A Comprehensive Benchmark of Small Language Models on Environmental Impacts—Extended Version. Research question: How does synthetic data augmentation affect the pass@1 performance of sub-10B models on cross-language code security benchmarks like SIMCOPILOTP?.

## 2 Methodology

Systematic literature search across multiple databases yielded 10 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 4.7/10.

## 3 Results

10 papers retrieved. 0 claims extracted; 0 independently verified. Quality review score: 4.7/10.

## 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/2411.15497v3>
- <http://arxiv.org/abs/2508.15478v2>
- <http://arxiv.org/abs/2403.03788v1>