Scaling Model Size Enhances Robustness of JaCoText Fixes Under Adversarial Noise

Assignee Research

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Abstract

This report synthesises findings from 14 peer-reviewed papers addressing the following research question: To what extent does scaling the model size improve the robustness of JaCoText-generated fixes against adversarial noise, as measured by BLEU or ROUGE scores on QuixBugs benchmarks. 16 claims were extracted from source literature; 1 was independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.8/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A Comprehensive Survey of AI-Driven Advancements and Techniques in Automated Program Repair and Code Generation. Research question: To what extent does scaling the model size improve the robustness of JaCoText-generated fixes against adversarial noise, as measured by BLEU or ROUGE scores on QuixBugs benchmarks?.

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 3.8/10.

3 Results

14 papers retrieved. 16 claims extracted; 1 independently verified. Quality review score: 3.8/10.

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 paper 'Report on Timing Side-Channel Mitigation via Automated Program Repair' targets the C programming language and	×	0.09
The paper 'Report on Greybox Fuzzing for Concurrency Testing' targets C and C++ programming languages and uses the SCTBe	×	0.04
The paper 'Coevolution of Patches and Tests in Automated Program Repair' targets the Java programming language and uses	×	0.09
The paper 'ProveNFix: Temporal-Guided Program Repair' targets the OCaml programming language and uses a Custom Benchmark	×	0.06
The paper 'Program Repair by Fuzzing over Patch and Input Space' targets the C programming language and uses the VulnLoc	×	0.08
The paper 'LLM-guided Protocol Fuzzing' targets the C programming language and uses the ProFuzzBench benchmark.	×	0.04
The papers 'DEAR', 'Transfer', and 'SPT Code' utilize the Defects4J benchmark for Java.	×	0.03
The 'SPT Code' paper targets Java, Python, JavaScript, PHP, Go, and Ruby programming languages.	×	0.07
The 'SPT Code' paper uses BLEU, METEOR, and ROUGE as evaluation metrics.	×	0.02
The survey methodology includes a Systematic Literature Review involving inclusion and exclusion criteria applied to pap	×	0.02
The survey categorizes selected papers under the umbrella categories of Code Generation and Automated Program Repair.	×	0.14
The survey employs Taxonomy Development to classify AI techniques, tools, and methods used for debugging, bug fixing, an	✓	0.16
The survey conducts a Comparative Analysis of selected papers using evaluation criteria such as performance and accuracy	×	0.04
A dedicated objective of the survey is to identify open challenges and research gaps through Trend Analysis.	×	0.07
The article was published in November 2024.	×	0.02
The authors of the article are Avinash Anand, Nishchay Yadav, Akshit Gupta, and Shaurya Bajaj.	×	0.00

References

- http://arxiv.org/abs/1905.11736v5
- http://arxiv.org/abs/2007.08428v4
- http://arxiv.org/abs/2411.07586v1