Adversarial Test Case Complexity and DeepSeek R1 Code Robustness on MBXP

Assignee Research

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Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: How does the cyclomatic complexity of adversarial test cases impact the robustness of Deepseek R1's generated code when evaluated using the MBXP benchmark, and can this be quantified by comparing. 6 claims were extracted from source literature; 6 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: A Survey on Large Language Models for Code Generation. Research question: How does the cyclomatic complexity of adversarial test cases impact the robustness of Deepseek R1's generated code when evaluated using the MBXP benchmark, and can this be quantified by comparing pass rates across different complexity thresholds?.

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 8.5/10.

3 Results

10 papers retrieved. 6 claims extracted; 6 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
Large Language Models (LLMs) have achieved advancements in code-related tasks, particularly in generating source code fr	✓	0.24
GitHub Copilot is an example of a practical application of LLMs for code generation in software development.	✓	0.18
There is a noticeable absence of a comprehensive and up-to-date literature review dedicated specifically to LLMs for cod	✓	0.25
The survey introduces a taxonomy categorizing developments in LLMs for code generation covering data curation, latest ad	✓	0.31
The survey presents an empirical comparison of LLM capabilities using the HumanEval, MBPP, and BigCodeBench benchmarks.	✓	0.20
The empirical comparison in the survey covers various levels of difficulty and types of programming tasks.	✓	0.18

References

- https://doi.org/10.48550/arxiv.2406.00515
- https://doi.org/10.48550/arxiv.2403.14734
- https://doi.org/10.1561/2200000083