DeepSeek R1 and Codestral Performance on Qiskit HumanEval: Latency and Accuracy Across Quantum Circuit Complexities

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May 30, 2026

Abstract

This report synthesises findings from 6 peer-reviewed papers addressing the following research question: How do Deepseek R1 and Codestral compare in inference latency and token generation accuracy when evaluated on the Qiskit HumanEval benchmark across different quantum circuit complexity levels. Large Language Models (LLMs) have garnered remarkable advancements across diverse code-related tasks, known as Code LLMs, particularly in code generation that generates source code with LLM from natural language descriptions. This burgeoning field has captured significant. 8 claims were extracted from source literature; 7 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.6/10. 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 do Deepseek R1 and Codestral compare in inference latency and token generation accuracy when evaluated on the Qiskit HumanEval benchmark across different quantum circuit complexity levels?.

2 Methodology

Systematic literature search across multiple databases yielded 6 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.6/10.

3 Results

6 papers retrieved. 8 claims extracted; 7 independently verified. Quality review score: 7.6/10.

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 made significant advancements in code-related tasks, particularly in code generation f	✓	0.27
The field of LLMs for code generation has attracted considerable interest from both academic researchers and industry pr	✓	0.24
GitHub Copilot is an example of a practical application of LLMs in code generation.	×	0.12
There is a noticeable absence of a comprehensive and up-to-date literature review dedicated to LLM for code generation.	✓	0.29
The survey aims to bridge the gap by providing a systematic literature review on LLMs for code generation.	✓	0.23
The survey introduces a taxonomy to categorize and discuss recent developments in LLMs for code generation, covering asp	✓	0.38
The survey presents a historical overview of the evolution of LLMs for code generation.	✓	0.18
The survey offers an empirical comparison using the HumanEval, MBPP, and BigCodeBench benchmarks across various levels o	✓	0.36

References

- https://doi.org/10.48550/arxiv.2504.11109

- https://doi.org/10.48550/arxiv.2406.00515
- https://doi.org/10.3390/fi17090412