Multimodal Context Enhances Cross-Lingual Code Generation in HumanEval and MBPP Benchmarks

Assignee Research

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Abstract

This report synthesises findings from 6 peer-reviewed papers addressing the following research question: How does the performance of multimodal context (code + natural language + diagrams) compare to single-modal context (code-only) in cross-lingual self-invoking code generation tasks, as measured by. 8 claims were extracted from source literature; 6 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.3/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A Systematic Study and Comprehensive Evaluation of ChatGPT on Benchmark Datasets. Research question: How does the performance of multimodal context (code + natural language + diagrams) compare to single-modal context (code-only) in cross-lingual self-invoking code generation tasks, as measured by pass@1 on Python-to-JavaScript and Java-to-Python tasks in HumanEval+ and MBPP+?.

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 7.3/10.

3 Results

6 papers retrieved. 8 claims extracted; 6 independently verified. Quality review score: 7.3/10.

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 study evaluates ChatGPT across 140 tasks.	×	0.12
The study analyzes 255,000 responses generated by ChatGPT.	×	0.04
This work is the largest evaluation of ChatGPT in NLP benchmarks.	✓	0.24
The evaluation covers tasks including question-answering, text summarization, code generation, commonsense reasoning, ma	✓	0.30
The study reports a new emergent ability to follow multi-query instructions found mostly in ChatGPT and other instructio	✓	0.25
ChatGPT is capable of performing a wide variety of tasks.	✓	0.20
ChatGPT may obtain impressive performance in several benchmark datasets.	✓	0.22
ChatGPT is far from achieving the ability to reliably solve many challenging tasks.	✓	0.22

References

- https://doi.org/10.48550/arxiv.2307.06435
- https://doi.org/10.48550/arxiv.2305.18486
- https://doi.org/10.18653/v1/2023.findings-acl.29