

Consistency Regularization Effects on CodeT5 Cross-Lingual Code Generation Performance

Assignee Research

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Abstract

This report synthesises findings from 12 peer-reviewed papers addressing the following research question: Does consistency regularization improve cross-lingual code generation performance on the MBPP benchmark when applied to CodeT5 models fine-tuned on low-resource programming languages like Rust. 13 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.5/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Cross-Lingual Consistency of Factual Knowledge in Multilingual Language Models. Research question: Does consistency regularization improve cross-lingual code generation performance on the MBPP benchmark when applied to CodeT5 models fine-tuned on low-resource programming languages like Rust compared to high-resource languages like Python?.

2 Methodology

Systematic literature search across multiple databases yielded 12 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 3.5/10.

3 Results

12 papers retrieved. 13 claims extracted; 0 independently verified. Quality review score: 3.5/10.

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
The multilingual BLOOM-3b model outputs consistently correct completions for the query regarding the capital of China wh	×	0.04
The multilingual BLOOM-3b model outputs inconsistent or incorrect completions for the query regarding the capital of Chi	×	0.02
When queried about the original language of The Godfather, the BLOOM-3b model outputs 'Russian' in Hungarian and 'Englis	×	0.02
The BLOOM-3b model outputs consistent, though wrong, answers to the query about the original language of The Godfather i	×	0.04
The average Cross-Lingual Consistency (CLC) accuracy for the BLOOM-3b model is 25%.	×	0.14
The average Cross-Lingual Consistency (CLC) accuracy for the BLOOM-1.7b model is 25%.	×	0.13
The average Cross-Lingual Consistency (CLC) accuracy for the BLOOM-1.1b model is 24%.	×	0.13
The average Cross-Lingual Consistency (CLC) accuracy for the BLOOM-560m model is 23%.	×	0.12
The mT5-large model achieves a CLC accuracy of 46.8 in Russian (ru).	×	0.05
The BLOOM-7.1b model achieves a CLC accuracy of 51.7 in Russian (ru).	×	0.03
The LLaMA-7b model achieves a CLC accuracy of 56.4 in Russian (ru).	×	0.03
The BLOOM-3b model achieves a CLC accuracy of 52.3 in Russian (ru).	×	0.03
Code and data for the study are released at https://github.com/Betswish/Cross-Lingual-Consistency .	×	0.13

References

- <http://arxiv.org/abs/2310.10378v5>
- <http://arxiv.org/abs/2506.15415v1>
- <http://arxiv.org/abs/2505.18673v1>