Code-Text Pretraining Enhances Cross-Lingual Code Generation in Low-Resource Languages

Assignee Research

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Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: What is the impact of code-text pretraining on cross-lingual code generation accuracy for low-resource programming languages when evaluated on the HumanEval-X benchmark. 11 claims were extracted from source literature; 1 was independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 6.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: ERNIE-Code: Beyond English-Centric Cross-lingual Pretraining for Programming Languages. Research question: What is the impact of code-text pretraining on cross-lingual code generation accuracy for low-resource programming languages when evaluated on the HumanEval-X benchmark?.

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 6.7/10.

3 Results

10 papers retrieved. 11 claims extracted; 1 independently verified. Quality review score: 6.7/10.

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
ERNIE-Code is the first LLM targeting multilingual NL and PL explicitly.	×	0.10
mBART is a multilingual-NL variant of BART trained with a full-text denoising objective on a subset of 25 languages from	×	0.06
mT5 is a multilingual-NL encoder-decoder model adapted from T5, trained on 101 NLs using filtered CommonCrawl data (mC4)	×	0.08
PLBART is a multilingual-PL version of BART with a denoising objective using three noising formats, trained on 210M Java	×	0.03
CodeT5 is a PL version of mT5 pre-trained on six-PL monolingual/parallel data from CodeSearchNet and extra C/C# data col	×	0.10
mCoNaLa consists of 341/210/345 manually curated parallel samples with NL in Spanish/Japanese/Russian and PL in Python.	×	0.02
CoNaLa consists of 2,379 samples of English-Python parallel data.	×	0.04
ERNIE-Code shows consistent performance gains on several multilingual NL/PL benchmarks, including code-to-text, text-to-	✓	0.24
ERNIE-Code (L1024) achieves 72.49 B-4 and 26.7 chrF on average for multilingual code summarization.	×	0.10
ERNIE-Code (L1024) achieves 74.49 B-4 and 24.7 EM for En-Zh translation.	×	0.05
ERNIE-Code (L1024) achieves 91.17 B-4 and 2.00 EM for Refine medium task.	×	0.04

References

- http://arxiv.org/abs/2303.12869v1
- http://arxiv.org/abs/2212.06742v2
- http://arxiv.org/abs/2505.18673v1