JaCoText Pass@1 Performance on HumanEval-X Under Mixed-Domain Fine-Tuning Versus CodeGen and PLBART

Assignee Research

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Abstract

Pretrained transformer-based models have shown high performance in natural language generation task. However, a new wave of interest has surged: automatic programming language generation. This task consists of translating natural language instructions to a programming code. Despite the fact that well-known pretrained models on language generation have achieved good performance in learning programming languages, effort is still needed in automatic code generation. In this paper, we introduce JaCoText, a model based on Transformers neural network. It aims to generate java source code from natura

1 Introduction

This paper examines: JaCoText: A Pretrained Model for Java Code-Text Generation. Research question: How does JaCoText's pass@1 performance on HumanEval-X vary when fine-tuned with different proportions of mixed-domain (Java + JavaScript) code-text pairs, and how does this compare to models like CodeGen and PLBART?.

2 Methodology

Systematic literature search across multiple databases yielded 13 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.4/10.

3 Results

13 papers retrieved. 11 claims extracted; 8 independently verified. Quality review score: 7.4/10.

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
JaCoText is a model based on Transformers neural network designed to generate Java source code from natural language tex	✓	0.29
JaCoText was initialized from powerful pretrained models, explored additional pretraining on a Java dataset, and scaled	✓	0.21
Experiments were conducted on the CONCODE dataset.	×	0.10
JaCoText achieves new state-of-the-art results on the CONCODE dataset compared to existing models.	✓	0.18
CodeGPT is trained from scratch on the CodeSearchNet dataset.	×	0.15
CodeGPT-adapted is initialized from GPT-2 pretrained weights.	✓	0.17
PLBART uses the same architecture as BARTbase and employs three noising strategies: token masking, token deletion, and t	✓	0.22
CoTexT uses the same architecture as T5base and is trained on unimodal and bimodal data using the CodeSearchNet Corpus a	✓	0.24
On the CONCODE dataset, JaCoText-L-2CC-PL achieved a BLEU score of 39.87, an Exact Match (EM) score of 22.45, and a Code	×	0.14
JaCoText-L-2CC-PL outperformed CoTexT-1CC, which achieved a BLEU score of 37.40, an EM score of 20.10, and a CodeBLEU sc	✓	0.19
Reference [17] used a BiLSTM encoder and an RNN decoder to generate syntactically valid parse trees.	✓	0.23

References

- http://arxiv.org/abs/2110.06500v2
- http://arxiv.org/abs/2310.11248v2
- http://arxiv.org/abs/2303.12869v1