

# Context Window Optimization for Efficient Python Code Generation Under Data Constraints

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## Abstract

This report synthesises findings from 13 peer-reviewed papers addressing the following research question: Does optimizing context window size improve inference efficiency and maintain accuracy for Python code generation in data-constrained pretraining scenarios. We release Code Llama, a family of large language models for code based on Llama 2 providing state-of-the-art performance among open models, infilling capabilities, support for large input contexts, and zero-shot instruction following ability for programming tasks. We provide. 0 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: Code Llama: Open Foundation Models for Code. Research question: Does optimizing context window size improve inference efficiency and maintain accuracy for Python code generation in data-constrained pretraining scenarios?.

## 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 3.7/10.

## 3 Results

13 papers retrieved. 0 claims extracted; 0 independently verified. Quality review score: 3.7/10.

## 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.

## References

- <https://doi.org/10.48550/arxiv.2308.12950>
- <https://doi.org/10.1007/s11704-026-60308-3>
- <https://doi.org/10.48550/arxiv.2305.06161>