

# Multi-Agent Context Engineering Workflows Enhance LLM Reasoning in Niche Code Generation

Assignee Research

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## Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: What is the effect of multi-agent context engineering workflows on the reasoning accuracy of LLMs in niche domain code generation tasks measured by ReCode. Large Language Models (LLMs) have garnered remarkable advancements across diverse code-related tasks, known as Code LLMs, particularly in code generation that generates source code with LLM from natural language descriptions. This burgeoning field has captured significant. 7 claims were extracted from source literature; 7 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: A Survey on Large Language Models for Code Generation. Research question: What is the effect of multi-agent context engineering workflows on the reasoning accuracy of LLMs in niche domain code generation tasks measured by ReCode?.

## 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 8.7/10.

### 3 Results

10 papers retrieved. 7 claims extracted; 7 independently verified. Quality review score: 8.7/10.

### 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
Large Language Models (LLMs) have shown significant advancements in code-related tasks, particularly in code generation	✓	0.27
The field of LLMs for code generation has attracted substantial interest from both academic researchers and industry pro	✓	0.29
There is a noticeable absence of a comprehensive and up-to-date literature review dedicated to LLM for code generation.	✓	0.29
This survey aims to bridge the gap by providing a systematic literature review on the cutting-edge progress in LLMs for	✓	0.28
The survey introduces a taxonomy to categorize and discuss recent developments in LLMs for code generation, covering asp	✓	0.38
The survey presents a historical overview of the evolution of LLMs for code generation.	✓	0.19
The survey offers an empirical comparison using the HumanEval, MBPP, and BigCodeBench benchmarks across various levels o	✓	0.37

### References

- <https://doi.org/10.48550/arxiv.2406.00515>
- <https://doi.org/10.2196/59050>

- <https://doi.org/10.48550/arxiv.2310.19736>