

Synthetic vs. Human-Generated Math Data for Zero-Shot Benchmark Fine-Tuning

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Abstract

This report synthesises findings from 13 peer-reviewed papers addressing the following research question: How does fine-tuning with synthetic math problems generated by a stronger model affect the zero-shot performance on the MATH and GSM8K benchmarks compared to human-written fine-tuning data. 0 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.0/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: DART-Math: Difficulty-Aware Rejection Tuning for Mathematical Problem-Solving. Research question: How does fine-tuning with synthetic math problems generated by a stronger model affect the zero-shot performance on the MATH and GSM8K benchmarks compared to human-written fine-tuning data?.

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 3.0/10.

3 Results

13 papers retrieved. 0 claims extracted; 0 independently verified. Quality review score: 3.0/10.

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

- <http://arxiv.org/abs/2410.02152v1>
- <http://arxiv.org/abs/2604.25926v1>
- <http://arxiv.org/abs/2407.13690v2>