Gemma-2-7B vs. Mistral-7B and Llama-2-7B in Mathematical Reasoning on BIG-Bench

Assignee Research

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Abstract

This report synthesises findings from 11 peer-reviewed papers addressing the following research question: How does the mathematical reasoning performance of Gemma-2-7B compare to Mistral-7B and Llama-2-7B on BIG-Bench subsets when controlling for instruction finetuning scale. 8 claims were extracted from source literature; 7 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.1/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Qwen2.5 Technical Report. Research question: How does the mathematical reasoning performance of Gemma-2-7B compare to Mistral-7B and Llama-2-7B on BIG-Bench subsets when controlling for instruction finetuning scale?.

2 Methodology

Systematic literature search across multiple databases yielded 11 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.1/10.

3 Results

11 papers retrieved. 8 claims extracted; 7 independently verified. Quality review score: 8.1/10.

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
Qwen2.5 pre-training datasets were scaled from 7 trillion tokens to 18 trillion tokens.	✓	0.24
Qwen2.5 post-training implements supervised finetuning with over 1 million samples.	✓	0.19
Qwen2.5 post-training utilizes multistage reinforcement learning.	✓	0.16
Qwen2.5 open-weight offerings include base and instruction-tuned models.	✓	0.23
Quantized versions of Qwen2.5 open-weight models are available.	×	0.14
The proprietary Qwen2.5 hosted solutions include two mixture-of-experts (MoE) variants: Qwen2.5-Turbo and Qwen2.5-Plus.	✓	0.23
Qwen2.5-Turbo and Qwen2.5-Plus are available from Alibaba Cloud Model Studio.	✓	0.22
Qwen2.5-72B-Instruct outperforms a number of open and proprietary models on benchmarks evaluating language understanding	✓	0.33

References

- https://doi.org/10.48550/arxiv.2403.08295
- https://doi.org/10.48550/arxiv.2412.15115
- https://doi.org/10.48550/arxiv.2407.10671