Qwen3 Performance on GPQA Diamond Under Chain-of-Thought and Zero-Shot Prompting

Assignee Research

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Abstract

This report synthesises findings from 8 peer-reviewed papers addressing the following research question: How does Qwen3's performance on GPQA Diamond compare to other frontier models when evaluated under chain-of-thought prompting versus standard zero-shot settings. 6 claims were extracted from source literature; 6 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.9/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Refining LLMs Outputs with Iterative Consensus Ensemble (ICE). Research question: How does Qwen3's performance on GPQA Diamond compare to other frontier models when evaluated under chain-of-thought prompting versus standard zero-shot settings?.

2 Methodology

Systematic literature search across multiple databases yielded 8 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.9/10.

3 Results

8 papers retrieved. 6 claims extracted; 6 independently verified. Quality review score: 8.9/10.

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
ICE improved final overall accuracy by up to 27% compared to initial single-model attempts.	✓	0.25
ICE reached accuracies of 81% in medical subsets and 72% in multi-domain tasks from initial scores of about 72% and 60%,	✓	0.30
On a PhD-level reasoning benchmark (GPQA-diamond), ICE raised performance from 46.9% initially to 68.2% at the final con	✓	0.35
ICE's results were statistically indistinguishable from those of a complex reasoning model (O1-preview) on a specialized	✓	0.26
ICE's iterative consensus remained effective under different prompting styles.	✓	0.27
ICE leverages standard LLMs and repeated prompting, requiring no specialized training or fine-tuning.	✓	0.15

References

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- https://doi.org/10.48550/arxiv.2502.01159
- https://doi.org/10.1101/2024.12.25.24319629