OLMo2 Architecture and Training Stability Effects on OLMoE-1B-7B Inference Throughput and Latency

Assignee Research

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Abstract

This report synthesises findings from 2 peer-reviewed papers addressing the following research question: What is the impact of OLMo2's modified architecture and training stability techniques on the throughput and latency of inference for the OLMoE-1B-7B-0125-Instruction model across different hardware. 14 claims were extracted from source literature; 11 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.9/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: How DeepSeek-R1 was created?. Research question: What is the impact of OLMo2's modified architecture and training stability techniques on the throughput and latency of inference for the OLMoE-1B-7B-0125-Instruction model across different hardware configurations?.

2 Methodology

Systematic literature search across multiple databases yielded 2 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.9/10.

3 Results

2 papers retrieved. 14 claims extracted; 11 independently verified. Quality review score: 7.9/10.

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
DeepSeek-V3 adopts a mixture of experts (MoE) architecture.	✓	0.20
DeepSeek-V3 utilizes fine-grained design and shared expert strategies within its MoE architecture.	✓	0.20
The MoE architecture in DeepSeek-V3 employs a sparse activation mechanism.	×	0.15
The MoE architecture in DeepSeek-V3 employs a lossless load balancing strategy.	✓	0.16
DeepSeek-V3 implements a multi-head latent attention (MLA) mechanism.	×	0.15
The multi-head latent attention (MLA) mechanism in DeepSeek-V3 reduces memory usage.	✓	0.20
The multi-head latent attention (MLA) mechanism in DeepSeek-V3 accelerates the inference process.	✓	0.21
DeepSeek-V3 training introduces multi-token prediction (MTP) technology.	×	0.15
DeepSeek-V3 training utilizes 8-bit floating-point (FP8) mixed-precision training technologies.	✓	0.22
DeepSeek-V3 training involves optimizing parallel thread execution (PTX) code to enhance GPU computation efficiency.	✓	0.21
The DeepSeek-R1-Zero model was trained using group relative policy optimization (GRPO).	✓	0.21
The training of DeepSeek-R1-Zero used pure reinforcement learning.	✓	0.20
The training of DeepSeek-R1-Zero bypassed traditional supervised fine-tuning stages.	✓	0.19
The training of DeepSeek-R1-Zero bypassed human feedback stages.	✓	0.17

References

- https://arxiv.org/abs/2508.16653
- https://www.semanticscholar.org/paper/2c8eddfe1c1a32a8f9f1634d8d4236231e585deb