Alignment Techniques Outperform Supervised Fine-Tuning on High-Difficulty Benchmarks

Assignee Research

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Abstract

This report synthesises findings from 16 peer-reviewed papers addressing the following research question: To what extent do alignment techniques (e.g., reinforcement learning from human feedback) improve model performance on HLE-Verified's high-difficulty questions compared to standard supervised. 10 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.8/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Is DPO Superior to PPO for LLM Alignment? A Comprehensive Study. Research question: To what extent do alignment techniques (e.g., reinforcement learning from human feedback) improve model performance on HLE-Verified's high-difficulty questions compared to standard supervised fine-tuning?.

2 Methodology

Systematic literature search across multiple databases yielded 16 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 3.8/10.

3 Results

16 papers retrieved. 10 claims extracted; 0 independently verified. Quality review score: 3.8/10.

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
The HH-RLHF dataset consists of 170k human preferences on AI assistant responses.	×	0.05
Experiments based on Llama2-7B were conducted using the HH-RLHF dataset.	×	0.03
The OpenAssistant reward model is used for evaluation but not during training.	×	0.08
GPT-4 is used to compare the responses of different models.	×	0.03
DPO is sensitive to the distribution shift between the base model outputs and preference data.	×	0.09
Iterative DPO is better than training on static data.	×	0.04
DPO fails to improve the performance on challenging tasks such as code generation.	×	0.09
Key factors for PPO training include advantage normalization, large batch size, and updating the parameters of the refer	×	0.05
DPO has demonstrated strong performances and become popular in the community.	×	0.04
Recent work discussed the performance gap of DPO and PPO on synthetic contextual bandits.	×	0.05

References

- http://arxiv.org/abs/2312.11456v4
- http://arxiv.org/abs/2404.10719v3
- http://arxiv.org/abs/2602.07464v1