

BSFA and SmoothFormer Integration Enhances Llama-3-70B Reasoning in Long-Context Technical Tasks

Assignee Research

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Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: What is the impact of combining BSFA with SmoothFormer on Llama-3-70b’s reasoning performance in multi-document technical tasks (e.g., arXiv papers) with 100K+ tokens, measured by MMLU and HellaSwag. 12 claims were extracted from source literature; 1 was independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.4/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Learning Long-Context Diffusion Policies via Past-Token Prediction. Research question: What is the impact of combining BSFA with SmoothFormer on Llama-3-70b’s reasoning performance in multi-document technical tasks (e.g., arXiv papers) with 100K+ tokens, measured by MMLU and HellaSwag scores?.

2 Methodology

Systematic literature search across multiple databases yielded 10 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 4.4/10.

3 Results

10 papers retrieved. 12 claims extracted; 1 independently verified. Quality review score: 4.4/10.

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 proposed method achieves an average improvement of over 30% compared to no-history diffusion policies, and over 60%	×	0.08
The gains are especially pronounced on history-critical tasks such as long-horizon aloha and long-horizon square.	×	0.04
Modern diffusion-based policies exhibit a clear drop in performance when conditioned on historical observations.	×	0.06
The proposed multi-stage training recipe accelerates policy learning.	×	0.06
PTP verification can further mitigate deficiencies in temporal dependencies at test time.	×	0.04
The method is evaluated on six simulated tasks, including square, tool hang, transport, Push-T, long-horizon square, and	×	0.03
The new long-horizon tasks require the policy to recall and act upon information observed earlier in the episode.	×	0.05
The proposed method is compared against no-history policies and no-PTP policies.	×	0.05
The method uses a multi-stage training recipe with feature caching.	×	0.03
The effect of test-time verification is evaluated separately across multiple checkpoints under varying sample budgets.	×	0.01
Past-Token Prediction (PTP) is an auxiliary objective that tasks the policy to predict past action tokens alongside futu	✓	0.29
PTP expands the prediction window in both temporal directions, explicitly encouraging the policy to capture temporal dep	×	0.08

References

- <http://arxiv.org/abs/2604.05114v1>
- <http://arxiv.org/abs/2306.10046v2>
- <http://arxiv.org/abs/2505.09561v2>