Computational Efficiency Trade-offs in LongNav-R1: Confusion-Based vs. Policy-Gradient Methods on House3D

Assignee Research

May 31, 2026

Abstract

This report synthesises findings from 13 peer-reviewed papers addressing the following research question: What is the computational efficiency trade-off between the confusion-based interactive method and the more complex policy-gradient-based approach in LongNav-R1 when evaluated on the House3D benchmark. This paper develops LongNav-R1, an end-to-end multi-turn reinforcement learning (RL) framework designed to optimize Visual-Language-Action (VLA) models for long-horizon navigation. Unlike existing single-turn paradigm, LongNav-R1 reformulates the navigation decision process as a. 0 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 0.0/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: LongNav-R1: Horizon-Adaptive Multi-Turn RL for Long-Horizon VLA Navigation. Research question: What is the computational efficiency trade-off between the confusion-based interactive method and the more complex policy-gradient-based approach in LongNav-R1 when evaluated on the House3D benchmark with increasing instruction complexity?.

2 Methodology

Systematic literature search across multiple databases yielded 13 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 0.0/10.

3 Results

13 papers retrieved. 0 claims extracted; 0 independently verified. Quality review score: 0.0/10.

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.

References

- http://arxiv.org/abs/2602.12351v1
- http://arxiv.org/abs/2602.12375v1
- http://arxiv.org/abs/2006.08505v5