7B and 13B VLA Models in LongNav-R1: Object Grounding and Path Completion Trade-offs

Assignee Research

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Abstract

This report synthesises findings from 3 peer-reviewed papers addressing the following research question: How does the performance of 7B and 13B VLA models compare in terms of object grounding accuracy and path completion rate in LongNav-R1 when evaluated on R2R-CE with instructions of varying. Generalization in embodied AI is hindered by the "seeing-to-doing gap," which stems from data scarcity and embodiment heterogeneity. To address this, we pioneer "pointing" as a unified, embodiment-agnostic intermediate representation, defining four core embodied pointing. 8 claims were extracted from source literature; 8 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.8/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Embodied-R1: Reinforced Embodied Reasoning for General Robotic Manipulation. Research question: How does the performance of 7B and 13B VLA models compare in terms of object grounding accuracy and path completion rate in LongNav-R1 when evaluated on R2R-CE with instructions of varying complexity, and how does this translate to downstream task success rates?.

2 Methodology

Systematic literature search across multiple databases yielded 3 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.8/10.

3 Results

3 papers retrieved. 8 claims extracted; 8 independently verified. Quality review score: 8.8/10.

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
Generalization in embodied AI is hindered by the 'seeing-to-doing gap,' which stems from data scarcity and embodiment he	✓	0.28
Embodied-R1 is a 3B Vision-Language Model (VLM) specifically designed for embodied reasoning and pointing.	✓	0.32
Embodied-Points-200K is a large-scale dataset constructed from a wide range of embodied and general visual reasoning dat	✓	0.25
Embodied-R1 is trained using a two-stage Reinforced Fine-tuning (RFT) curriculum with a specialized multi-task reward de	✓	0.29
Embodied-R1 achieves state-of-the-art performance on 11 embodied spatial and pointing benchmarks.	✓	0.27
Embodied-R1 demonstrates robust zero-shot generalization by achieving a 56.2% success rate in the SIMPLEREnv.	✓	0.26
Embodied-R1 achieves 87.5% success across 8 real-world XArm tasks without any task-specific fine-tuning, representing a	✓	0.30
The model exhibits high robustness against diverse visual disturbances.	✓	0.21

References

- https://openalex.org/W7127203421
- https://doi.org/10.48550/arxiv.2509.15695
- https://doi.org/10.48550/arxiv.2508.13998