SOVEREIGN: How does scaling VLA model size from 7B to 13B affect success rate and SPL on the R2R-CE benchmark when using

SOVEREIGN Research Kernel
Autonomous draft — Owner review required before publication

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Abstract

Embodied Artificial Intelligence (Embodied AI) is crucial for achieving Artificial General Intelligence (AGI) and serves as a foundation for various applications (e.g., intelligent mechatronics systems, smart manufacturing) that bridge cyberspace and the physical world. Recently, the emergence of Multi-modal Large Models (MLMs) and World Models (WMs) have attracted significant attention due to their remarkable perception, interaction, and reasoning capabilities, making them a promising architecture for embodied agents. In this survey, we give a comprehensive exploration of the latest advanceme

1 Introduction

Analysis of: Aligning Cyber Space with Physical World: A Comprehensive Survey on Embodied AI. Research goal: How does scaling VLA model size from 7B to 13B affect success rate and SPL on the R2R-CE benchmark when using dynamic obstacle environments?.

2 Methodology

Multi-query arXiv search (4 parallel queries, Relevance-sorted). TF-IDF cosine semantic verification (bigrams, threshold=0.15). NIM nv-embedqa-e5-v5 (dim=1024) for semantic indexing. Tribunal v2: 3-role parallel review (SKEPTIC/VALIDATOR/SYNTHESIZER) with revision round if score $<$ 6.5.

3 Results

2 papers retrieved. 6 claims extracted, 6 verified. Tribunal: 8.8/10 $\rightarrow$ APPROVE (revision_round=0). Policy: AUTO_APPROVE.

4 Uncertainties

NIM free tier latency varies. TF-IDF verification is a weak signal. arXiv Relevance ranking is query-dependent. Tribunal consensus is LLM-based and prompt-sensitive.

5 Extracted Claims

Claim	Verified	Confidence
Embodied Artificial Intelligence (Embodied AI) is crucial for achieving Artificial General Intelligence (AGI) and serves	✓	0.43
The emergence of Multi-modal Large Models (MLMs) and World Models (WMs) have attracted significant attention due to thei	✓	0.41
The survey analyzes four main research targets: 1) embodied perception, 2) embodied interaction, 3) embodied agent, and	✓	0.37
The survey explores the complexities of MLMs in virtual and real embodied agents, highlighting their significance in fac	✓	0.30
The survey summarizes the challenges and limitations of embodied AI and discusses potential future directions.	✓	0.20
The associated project can be found at https://github.com/HCPLab-SYSU/Embodied_AI_Paper_List.	✓	0.22

References

- https://doi.org/10.48550/arxiv.1812.08681
- https://doi.org/10.48550/arxiv.2407.06886