

BEHAVIOR-1K: A Benchmark for Embodied AI with 1,000 Everyday Activities and Realistic Simulation

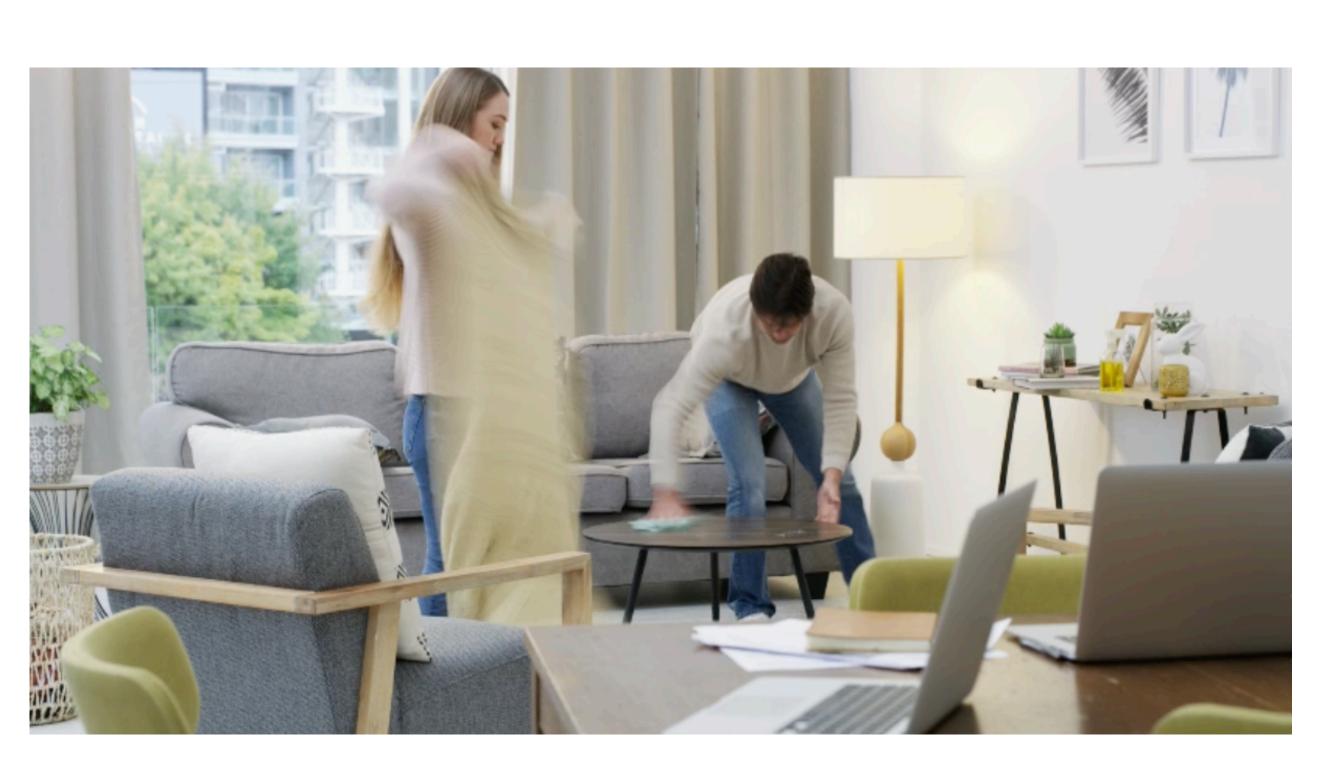
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ntroduction

Embodied AI research benefited from simulation benchmarks Most simulation benchmarks have limited diversity & realism



What robots can do



What humans want

An ideal simulation benchmark should be

- Human-centered: based on human needs, goals and values
- Diverse: the diversity of tasks, scenes, objects, scenarios is key to generalization in the messy, unpredictable real-world
- Realistic: the realism of simulation is necessary for sim2real policy transfer that involves complex dynamics & visuals

Main Contributions

BEHAVIOR-1K is a comprehensive simulation benchmark for human-centered robotics that includes the following:

- Extensive survey: "what do you want robots to do for you?"
- BEHAVIOR-1K Dataset: a knowledge-base of 1K crowdsourced activity definitions with relevant objects & properties + a repository of 3D assets with rich annotations
- OmniGibson: a state-of-the-art 3D environment that provides realistic physics simulation and rendering of complex phenomenon (e.g. fluid, cloth, soft body, etc)

Goal: benchmark complex, diverse household activities grounded in human needs in realistic simulation

