Twitter Thread by Ankur Handa



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Some simulation platforms that caught my eye this year ■

RoboThor from @allen_ai

https://t.co/Ch6GvWHHgP



ThreeDWorld: A Platform for Interactive Multi-Modal Physical Simulation

https://t.co/vEXqGx1ddA

https://t.co/I6UQKTDf41

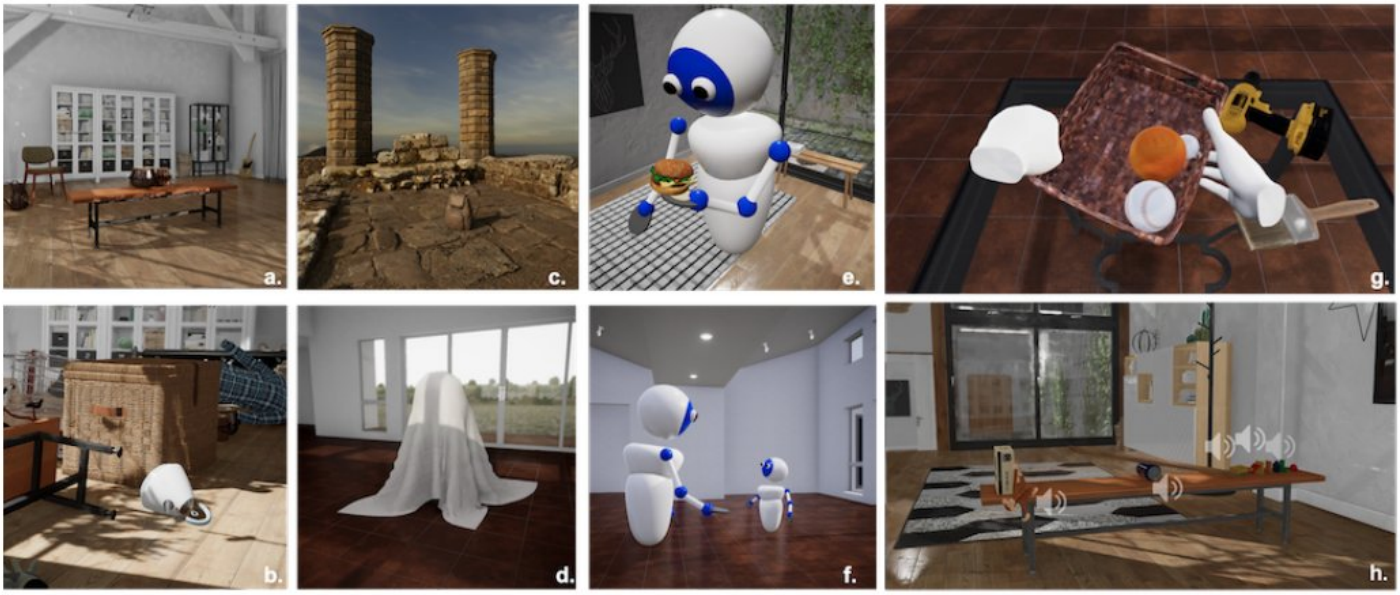


Figure 1: TDW's general, flexible design supports a broad range of use-cases at a high level of multi-modal fidelity: a-c) Indoor and outdoor scene rendering; d) Advanced physics – cloth draping over a rigid body; e) Avatar picking up object; f) Multi-agent scene – "parent" and "baby" avatars interacting; g) Human user interacting with virtual objects in VR; h) Multi-modal scene – speaker icons show playback locations of synthesized impact sounds.

SAPIEN: A SimulAted Part-based Interactive ENvironment

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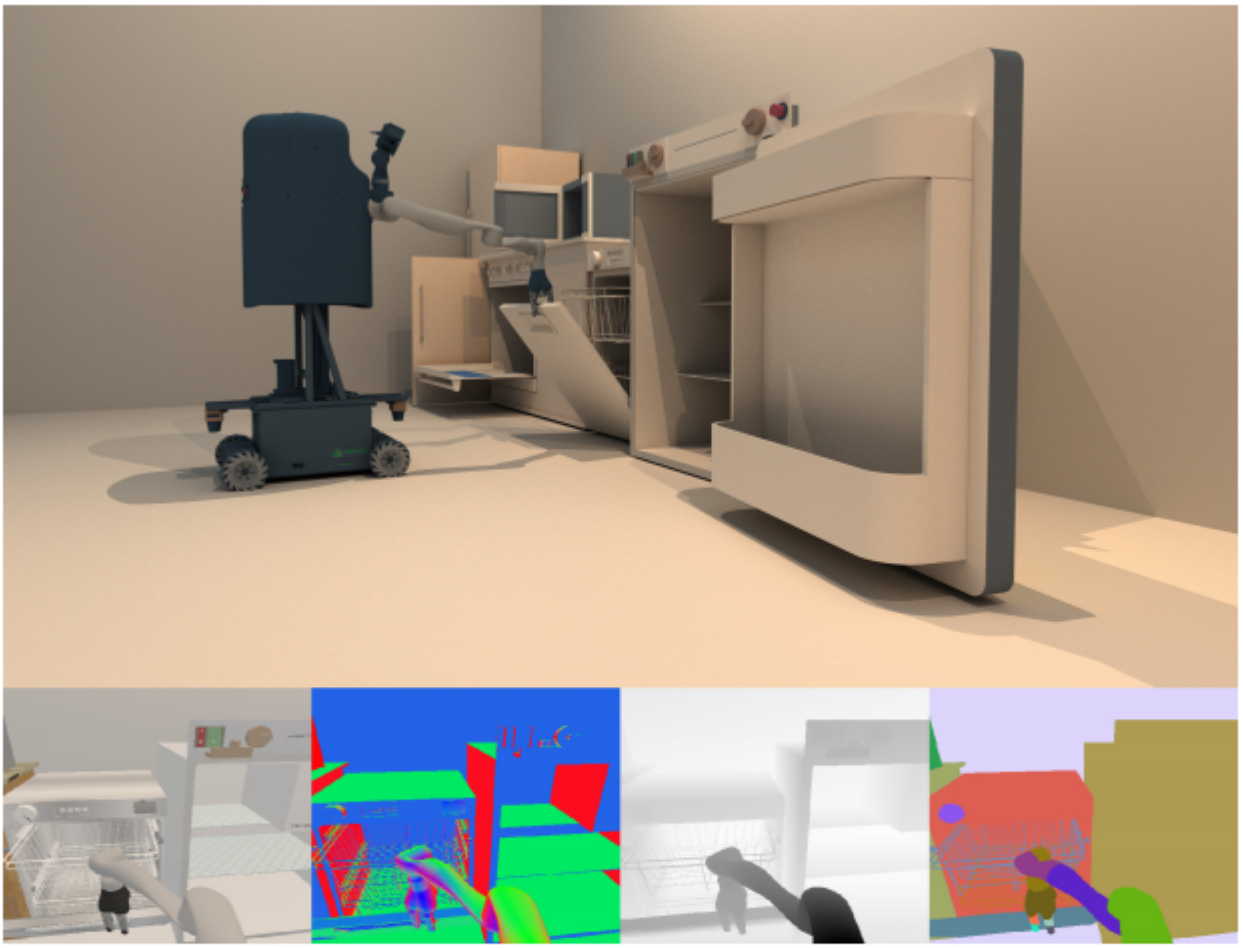
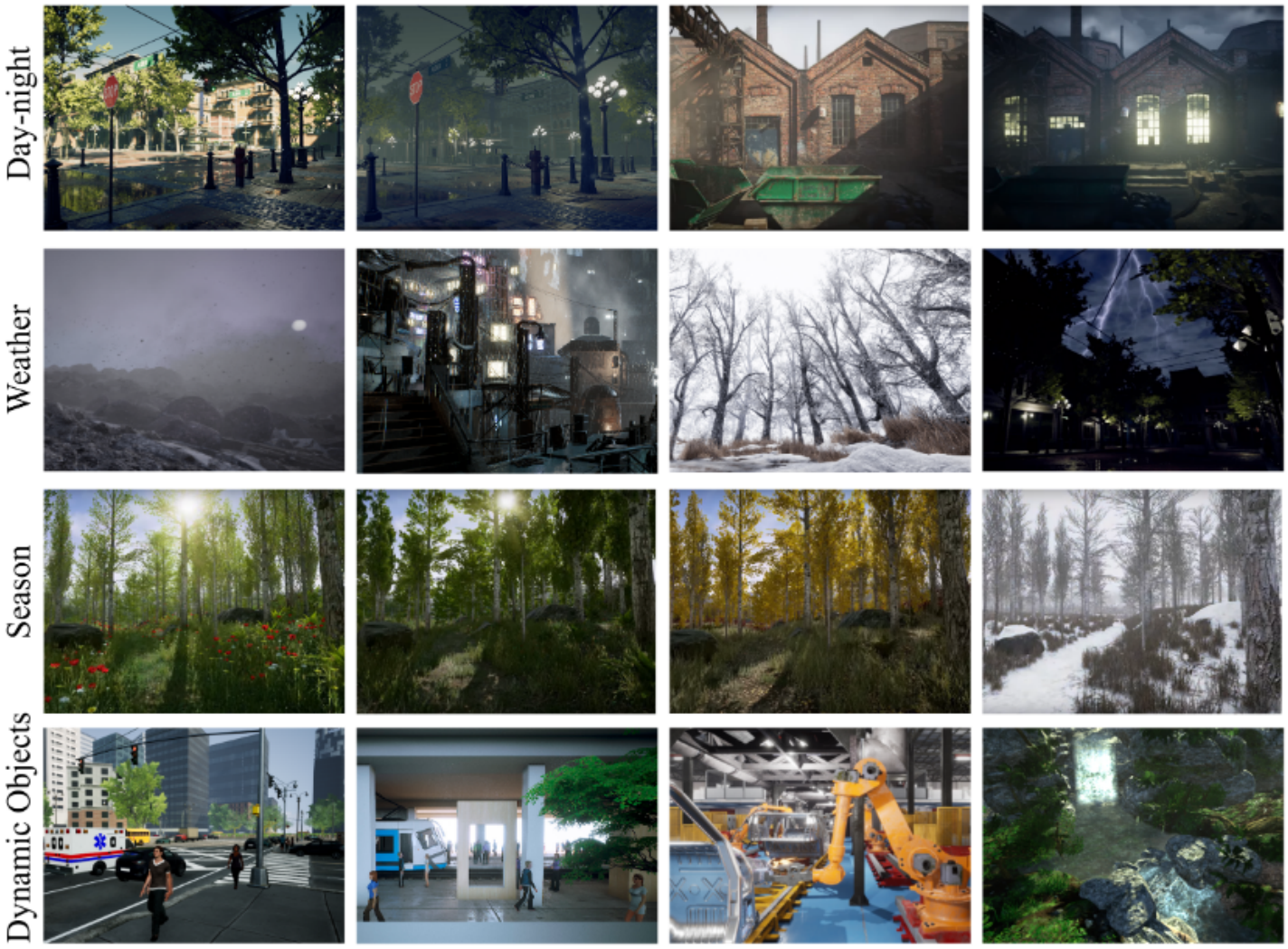


Figure 1: **Robot-object Interaction in SAPIEN.** We show the ray-traced scene (top) and robot camera views (bottom): RGB image, surface normals, depth and semantic segmentation of motion parts, while a robot is learning to operate a dishwasher.

TartanAir: A Dataset to Push the Limits of Visual SLAM

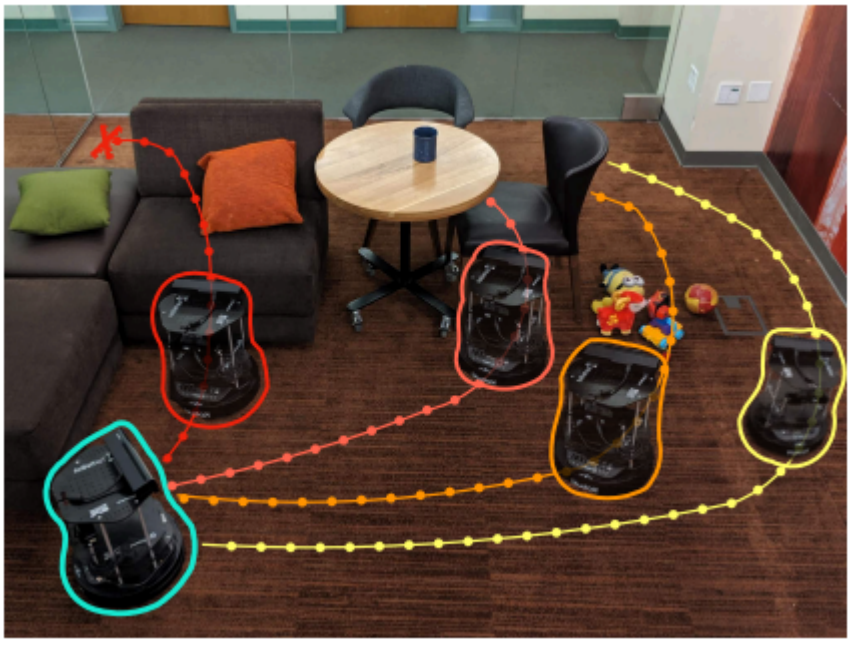
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Interactive Gibson: A Benchmark for Interactive Navigation in Cluttered Environments

https://t.co/iUMCZK1o8c



virtual home (v2)

https://t.co/cvv4G2MN04



AllenAct: A Framework for Embodied AI Research

https://t.co/7d2C2pJR0W

https://t.co/Ch2blo8VC1

robosuite: A Modular Simulation Framework and Benchmark for Robot Learning

https://t.co/pmp5Au2s5A

robosuite.ai

Abstract

robosuite is a simulation framework for robot learning powered by the MuJoCo physics engine. It offers a modular design for creating robotic tasks as well as a suite of benchmark environments for reproducible research. This paper discusses the key system modules and the benchmark environments of our new release **robosuite** v1.0.

NeuralSim: Augmenting Differentiable Simulators with Neural Networks

https://t.co/dQhkE9Kx59

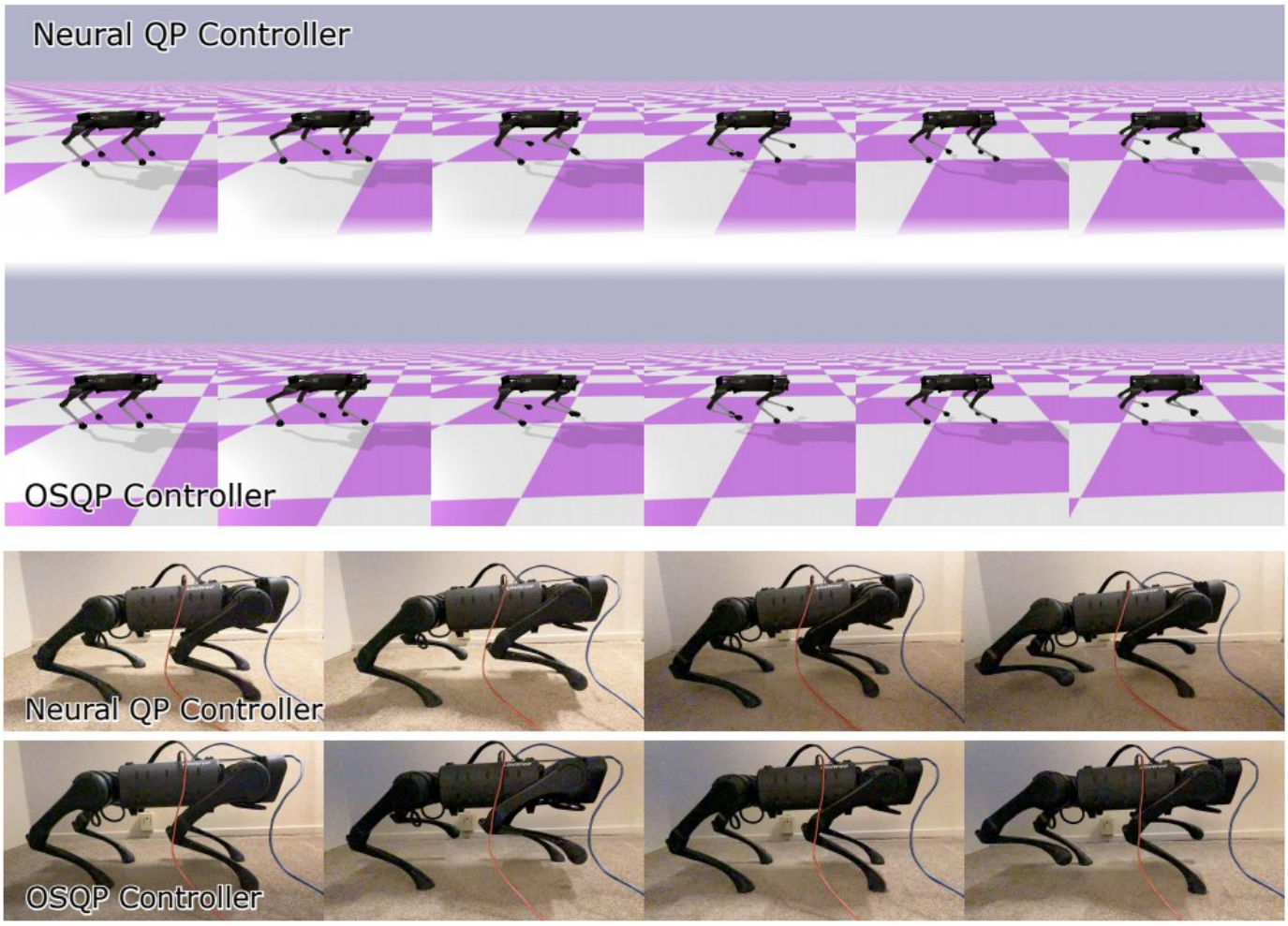


Fig. 1: *Top:* Snapshots from a few seconds of the locomotion trajectories generated by the QP-based model-predictive controller (first row) and the neural network controller imitating the QP solver (second row) in our differentiable simulator running the Laikago quadruped. *Bottom:* model-predictive control using the neural network (third row) and OSQP (fourth row) running on a real Unitree A1 robot.

SoftGym: Benchmarking Deep Reinforcement Learning for Deformable Object Manipulation

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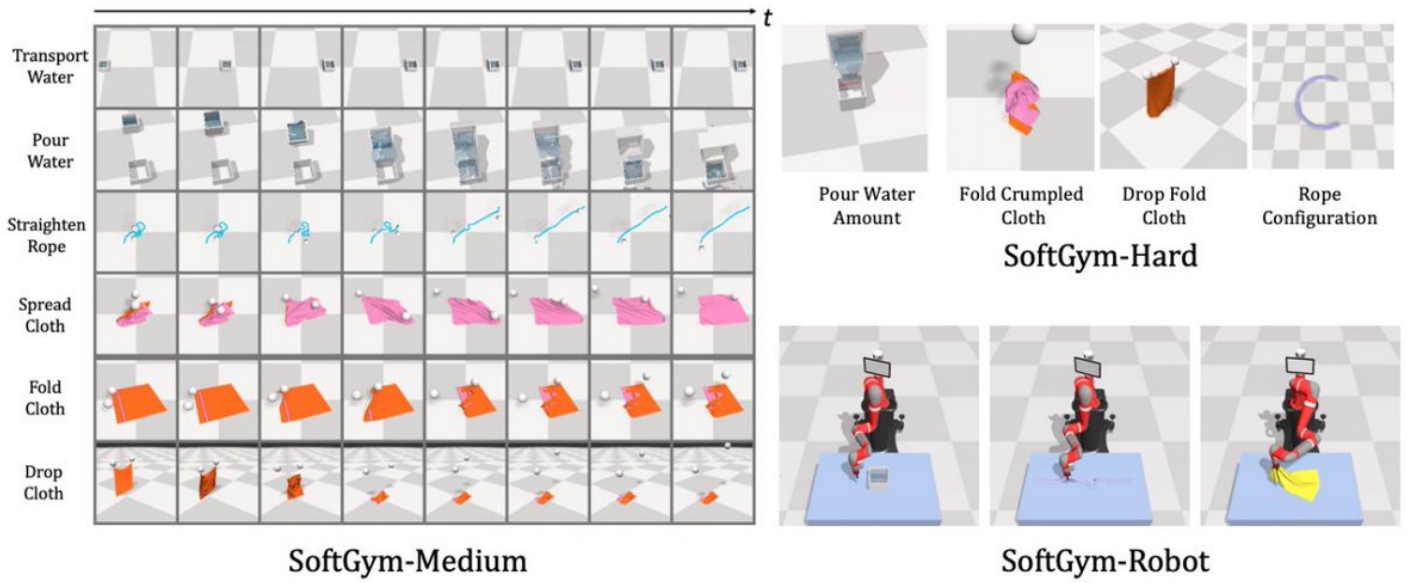


Figure 1: Visualizations of all tasks in SoftGym. These tasks can be used to evaluate how well an algorithm works on a variety of deformable object manipulation tasks.

Flightmare: A Flexible Quadrotor Simulator

https://t.co/p1NfyJrPHm

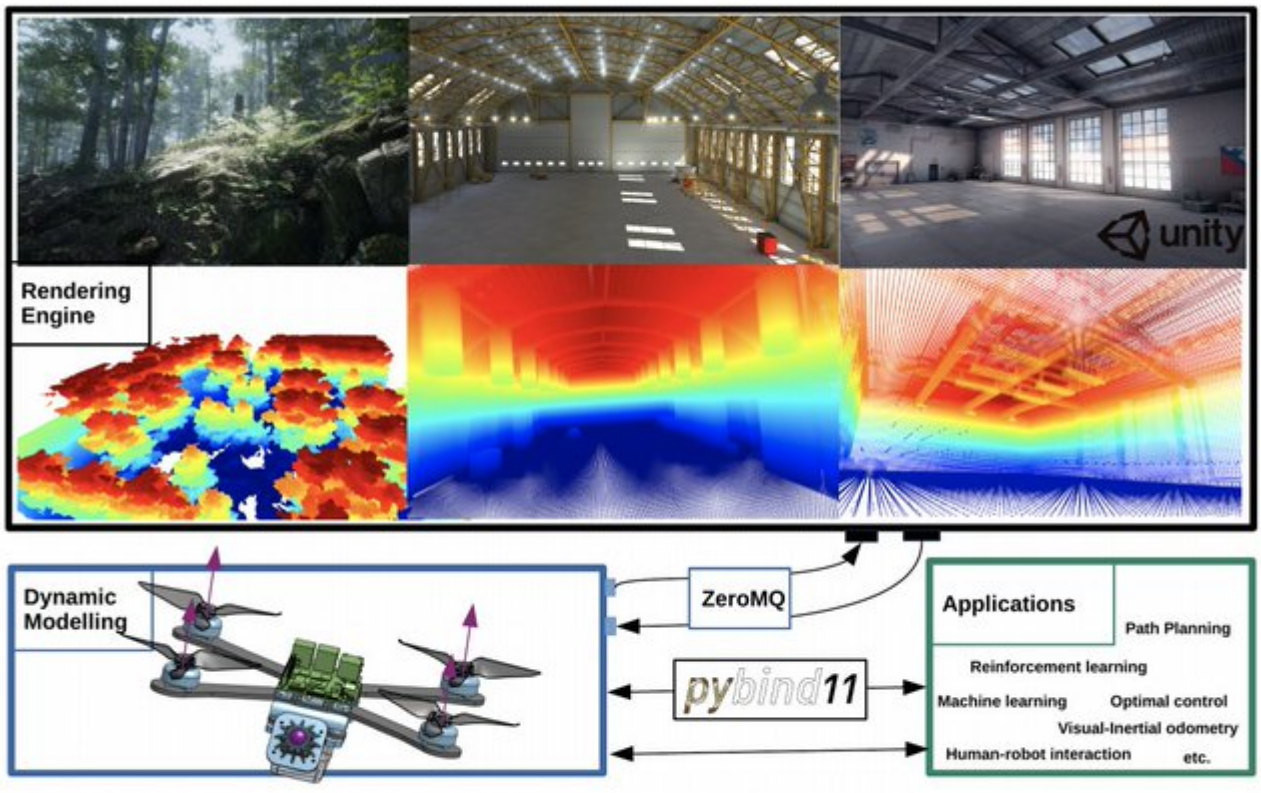
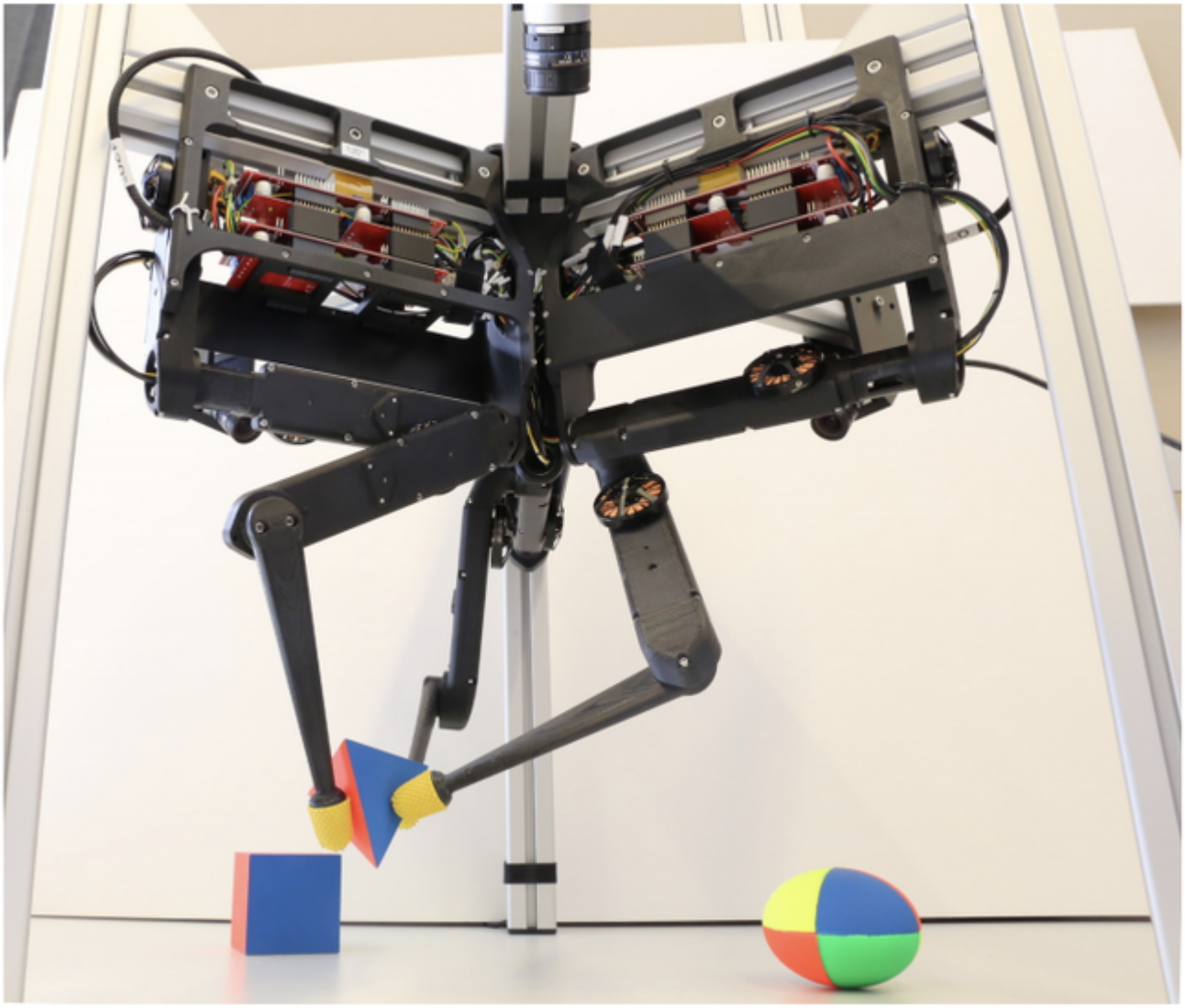


Figure 1: System overview of Flightmare.

TriFinger: An Open-Source Robot for Learning Dexterity

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Eldersim: A Synthetic Data Generation Platform For Human Action Recognition In Eldercare Applications

https://t.co/TD43xqMZZu

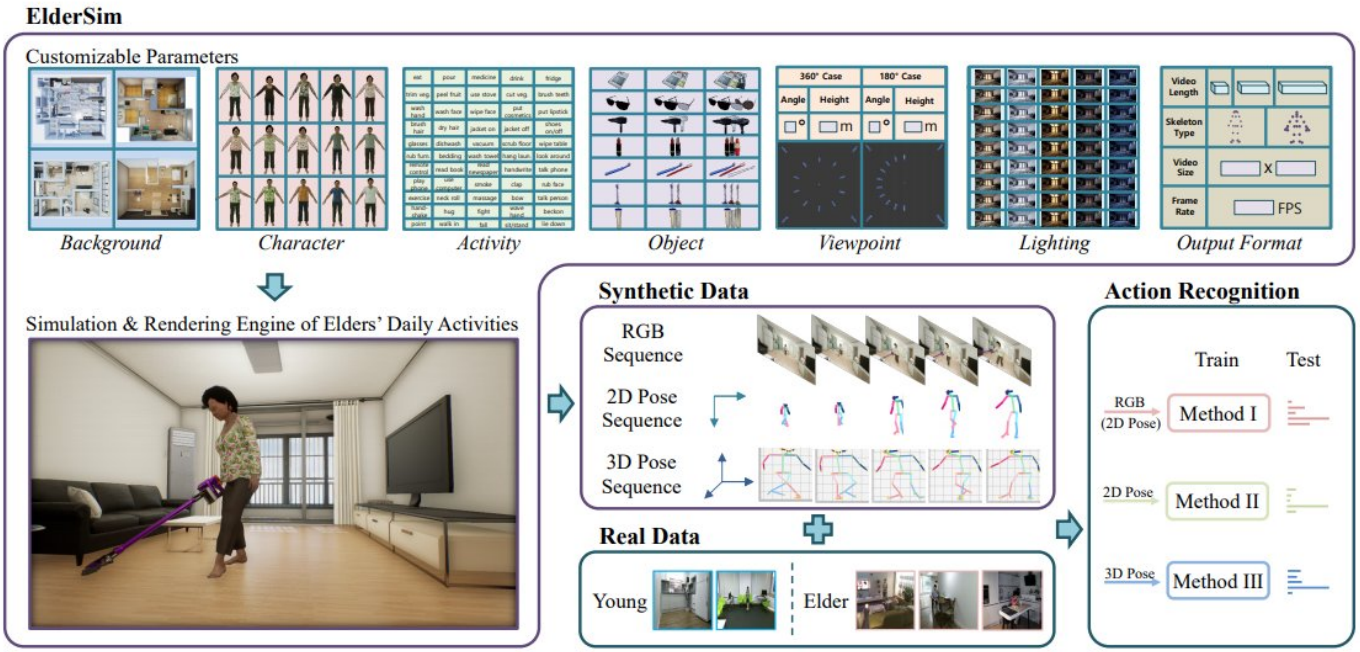


Figure 1: Synthetic data generation process of ElderSim and the main pipeline of our proposed work. ElderSim generates synthetic RGB video, 2D, and 3D skeleton data based on the data-generating options that are customized by the user. Here, we experimentally augment synthetic data on real ones and train three different action recognition methods (Method I: Glimpse [11], Method II: ST-GCN [12], Method III: VA-CNN [13]) to scrutinize the effects of our generated data.