

Xiaodi “Ada” Yuan

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EDUCATION

University of California San Diego

Sep 2023 - Expected 2027

Ph.D. in Computer Science

- Advised by Prof. Hao Su (2023 – 2026) and Prof. Henrik Christensen (2026 – Present)

Tsinghua University

Sep 2019 - Jun 2023

B.Eng. in Computer Science

- Yao Class, Institute for Interdisciplinary Information Sciences (IIIS)
- GPA: 3.97/4.00, rank 3/32

EMPLOYMENT

Amazon Frontier AI & Robotics (FAR), Research Intern

Jan 2026 - Sep 2026

LightSpeed Studios, Tencent America, Research Intern

Jun 2025 - Sep 2025

Hillbot, Research Intern

Jun 2024 - Sep 2024

PUBLICATIONS

- **Xiaodi Yuan**, Rutav Shah, Henrik I Christensen, Rocky Duan, Guanya Shi. “When Does Sim-and-Real Co-Training Make Simulation a Reliable Evaluator?” *In submission*.
- **Xiaodi Yuan**, Fanbo Xiang, Yin Yang, Hao Su. “C5D: Sequential Continuous Convex Collision Detection Using Cone Casting”. *SIGGRAPH*, 2025; *ACM Transactions on Graphics (TOG)*, 2025.
- Seonghun Oh*, **Xiaodi Yuan***, Xinyue Wei*, Ruoxi Shi, Fanbo Xiang, Minghua Liu, Hao Su. “PaMO: Parallel Mesh Optimization for Intersection-Free Low-Poly Modeling on the GPU”. *Pacific Graphics (PG)*, 2025; *Computer Graphics Forum (CGF)*, 2025.
- Tongxuan Tian*, Haoyang Li*, Bo Ai, **Xiaodi Yuan**, Zhiao Huang, and Hao Su. “Diffusion Dynamics Models with Generative State Estimation for Cloth Manipulation”. *Conference on Robot Learning (CoRL)*, 2025.
- Weikang Wan*, Jiawei Fu*, **Xiaodi Yuan**, Yifeng Zhu, Hao Su. “LodeStar: Long-horizon Dexterity via Synthetic Data Augmentation from Human Demonstrations”. *Conference on Robot Learning (CoRL)*, 2025.
- Stone Tao, Fanbo Xiang, Arth Shukla, Yuzhe Qin, Xander Hinrichsen, **Xiaodi Yuan**, Chen Bao, Xinsong Lin, Yulin Liu, Tse-kai Chan, Yuan Gao, Xuanlin Li, Tongzhou Mu, Nan Xiao, Arnav Gurha, Viswesh Nagaswamy Rajesh, Yong Woo Choi, Yen-Ru Chen, Zhiao Huang, Roberto Calandra, Rui Chen, Shan Luo, Hao Su. “ManiSkill3: GPU Parallelized Robotics Simulation and Rendering for Generalizable Embodied AI”. *Robotics: Science and Systems (RSS)*, 2025; *Robot Learning Workshop at International Conference on Learning Representations (ICLR)*, Oral Presentation, 2025.
- Weihang Chen, Jing Xu, Fanbo Xiang, **Xiaodi Yuan**, Hao Su, Rui Chen. “General-Purpose Sim2Real Protocol for Learning Contact-Rich Manipulation With Marker-Based Visuotactile Sensors”. *IEEE Transactions on Robotics (T-RO)*, 2024.
- Jiayuan Gu[†], Fanbo Xiang[†], Xuanlin Li*, Zhan Ling*, Xiqiang Liu*, Tongzhou Mu*, Yihe Tang*, Stone Tao*, Xinyue Wei*, Yunchao Yao*, **Xiaodi Yuan**, Pengwei Xie, Zhiao Huang, Rui Chen, Hao Su. “ManiSkill2: A Unified Benchmark for Generalizable Manipulation Skills.” *International Conference on Learning Representations (ICLR)*, 2023.

SELECTED RESEARCH EXPERIENCE

Simulation for Policy Evaluation

Jan 2026 - Sep 2026

Mentor: Guanya Shi @ Amazon FAR

- Worked on VLA post-training and evaluation on real robots and in simulated environments, targeting high sim-and-real performance correlation. Paper in submission.
- Built simulated environments in IsaacLab and Mujoco Warp for VLA evaluation.

Coupling in Lattice Boltzmann Method (LBM)

Jun 2025 - Sep 2025

Mentor: Kui Wu @ LightSpeed Studios

- Implemented LBM in NVIDIA Warp for fluid simulation with moving boundary conditions.

Continuous Convex Collision Detection (CCD) for Affine Body Dynamics (ABD)

Jul 2024 - Jan 2025

Mentor: Hao Su, Yin Yang

- Extended Convex CCD (as used in rigid simulators like Bullet) to piecewise affine trajectories to accelerate ABD simulation. The paper was accepted to SIGGRAPH 2025 and ACM Transactions on Graphics (ToG).

Real-Time Simulation for Soft-Body Manipulation

Mar 2024 - Jun 2024

Mentor: Hao Su, Yin Yang

- Implemented real-time simulation environments of cloth and ropes (elastic rods) on the GPU using the NVIDIA Warp library, based on Projective Dynamics and Position Based Dynamics. The cloth simulator was used in our CoRL 2025 paper.

Mesh Processing and Optimization

Dec 2023 - May 2024

Mentor: Hao Su

- Applied IPC-style optimization in mesh processing, aiming to generate low-poly, manifold, watertight, and self-intersection-free meshes from triangle-soup inputs. The paper has been published in CGF and presented at Pacific Graphics 2025.

IPC Simulation for Soft-Body Manipulation

Oct 2022 - Feb 2024

Mentor: Hao Su, Yin Yang, Tao Du

- Implemented a GPU-accelerated IPC (Incremental Potential Contact) simulator using the NVIDIA Warp library. It supports deformable objects using FEM (Finite Element Method) and rigid objects using ABD (Affine Body Dynamics).
- It served as the simulator for the ManiSkill-ViTac Challenge 2024 (presented at the ViTac workshop in ICRA 2024). The realistic tactile sensor simulation helped transfer policies trained in simulation to real-world robots.

Physical Simulation Projects

Mar 2022 - Aug 2022

Mentor: Hao Su

- **MPM and System Identification:** Implemented a differentiable MPM (Material Point Method) framework with PyTorch. A neural network can be plugged into the framework and optimized using differentiable simulation to estimate the physical properties of objects.
- **SPH and ManiSkill2:** Participated in the ManiSkill2 project, a robotic manipulation benchmark that supports rigid and soft-body tasks. Implemented the SPH (Smoothed-Particle Hydrodynamics) algorithm for the simulation environment of a soft-body manipulation task.

HONORS AND AWARDS

- **The National Scholarship** 2019 - 2020
- **Outstanding Student Leader** | Institute for Interdisciplinary Information Sciences, THU 2021
- **National Olympiad in Informatics (NOI), Silver Medal** 2018