Xiaodi "Ada" Yuan

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EDUCATION

University of California San Diego Sep 2023 - Present
Ph.D. in Computer Science

- Advised by Prof. Hao Su

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

Hillbot, Research Intern Jun 2024 - Sep 2024

LightSpeed Studios, Tencent America, Research Intern Jun 2025 - Sep 2025

PUBLICATIONS

- **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 (conditionally accepted).*
- 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

Coupling in Lattice Boltzmann Method (LBM) Jun 2025 - Present
Mentor: Kui Wu

- Ongoing project at Lightspeed Studios.

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 conditionally accepted to 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.

LANGUAGE SKILLS

- **TOEFL**: 109 (Reading 30, Listening 29, Speaking 24, Writing 26)
- **GRE**: 329 + 4.0 (Verbal 159, Quantitative 170, Writing 4.0)

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