Kaifeng Zhang

@ kaifeng.z@columbia.edu | GitHub | LinkedIn | kywind.github.io | New York, NY

Education

Columbia University Aug 2024 – Present
Ph.D. student in Computer Science *Advisor: Yunzhu Li*

University of Illinois Urbana-Champaign Aug 2023 – Aug 2024
Ph.D. Student in Computer Science *Advisor: Yunzhu Li*

- Completed one year of Ph.D. study before transferring to Columbia University.

Tsinghua University Sep 2019 – Jun 2023
B.Eng. in Computer Science, Institute for Interdisciplinary Information Sciences *GPA: 3.93/4.0*

- Visiting student at the University of California, San Diego from Feb 2022 to Jul 2022.

Publications

Real-to-Sim Robot Policy Evaluation with Gaussian Splatting Simulation of Soft-Body Interactions
Kaifeng Zhang*, Shuo Sha*, Hanxiao Jiang, Matthew Loper, Hyunjong Song, Guangyan Cai, Zhuo Xu, Xiaochen Hu, Changxi Zheng, Yunzhu Li
In submission, 2025.

BoxTwin: Learning Elastoplastic Articulated Object Dynamics from Videos
Heng Zhang, Gehan Zheng, **Kaifeng Zhang**, Hyunjong Song, Shivansh Patel, Xiaochen Hu, Yunzhu Li, Changxi Zheng, Peter Yichen Chen
In IROS Workshop RoDGE, 2025.

PhysTwin: Physics-Informed Reconstruction and Simulation of Deformable Objects from Videos
Hanxiao Jiang, Hao-Yu Hsu, **Kaifeng Zhang**, Hsin-Ni Yu, Shenlong Wang, Yunzhu Li
in International Conference on Computer Vision (ICCV), 2025.

Particle-Grid Neural Dynamics for Learning Deformable Object Models from RGB-D Videos
Kaifeng Zhang, Baoyu Li, Kris Hauser, Yunzhu Li
Robotics: Science and Systems (RSS), 2025.

Dynamic 3D Gaussian Tracking for Graph-Based Neural Dynamics Modeling
Mingtong Zhang*, **Kaifeng Zhang***, Yunzhu Li
Conference on Robot Learning (CoRL), 2024.

AdaptiGraph: Material-Adaptive Graph-Based Neural Dynamics for Robotic Manipulation
Kaifeng Zhang*, Baoyu Li*, Kris Hauser, Yunzhu Li
Robotics: Science and Systems (RSS), 2024 and ICRA RMDO Workshop, 2024 **(Best Abstract Award, Top 1)**

4DRecons: 4D Neural Implicit Deformable Objects Reconstruction from a single RGB-D Camera with Geometrical and Topological Regularizations
Xiaoyan Cong, Haitao Yang, Liyan Chen, **Kaifeng Zhang**, Li Yi, Chandrajit Bajaj, Qixing Huang
Preprint, 2024.

Self-Supervised Geometric Correspondence for Category-Level 6D Object Pose Estimation in the Wild
Kaifeng Zhang, Yang Fu, Shubhankar Borse, Hong Cai, Fatih Porikli, Xiaolong Wang
International Conference on Learning Representations (ICLR), 2023.

Semantic-Aware Fine-Grained Correspondence
Yingdong Hu, Renhao Wang, **Kaifeng Zhang**, Yang Gao
European Conference on Computer Vision (ECCV), 2022. **(Oral presentation)**

Research Experience

RoboPIL Lab, Columbia University & UIUC Aug 2023 – Present
Graduate Research Assistant *Advisor: Yunzhu Li*

- Research focus: dynamics model learning, robotic simulation, deformable object manipulation.
- Building a realistic real-to-sim pipeline for robot policy evaluation, leveraging Gaussian Splatting for rendering and soft-body digital twins for dynamics.

- Developing methods to create soft-body digital twins via neural dynamics models, enabling efficient identification from visual observations, photorealistic rendering, and integration into physics-based simulators. Demonstrated model-based planning with MPC using learned dynamics.

Wang Lab, University of California, San Diego Feb 2022 – Jul 2023
Undergraduate Research Assistant *Advisor: Xiaolong Wang*

- Research focus: 6D object pose estimation, 3D reconstruction, neural rendering.

Tsinghua Vision and Robotics Lab, Tsinghua University Jun 2021 – Mar 2022
Undergraduate Research Assistant *Advisor: Yang Gao*

- Research focus: self-supervised learning, vision encoders, video object segmentation.

Working Experience

SceniX, Inc. May 2025 – Aug 2025
Robotics Research Intern *Supervisor: Yunzhu Li, Changxi Zheng*

- Developed robotic simulation and real-to-sim pipelines for the evaluation of robot policies across varied tasks.
- Worked on perception, system identification, and simulation of diverse deformable objects, including ropes, plush toys, and paper boxes. Built end-to-end workflows, covering data collection, policy training, and evaluation.

Teaching Experience

COMS W4733: Computational Aspects of Robotics Columbia University
Instructor: Yunzhu Li *Fall 2025*

Awards & Honors

Best Abstract Award, 4th Workshop on Representing and Manipulating Deformable Objects @ ICRA 2024. 05/2024
Outstanding Graduate, Tsinghua University (Top 10%). 06/2023
Xuetang Scholarship, Tsinghua University. 10/2020
Freshman Scholarship, Tsinghua University. 10/2019
Silver Prize, the 35th Chinese Physics Olympiad, Chinese Physical Society. 08/2018

Academic Service

Conference and Journal Reviewer
CoRL, ICRA, IROS, RA-L, CVPR, ECCV, ICCV, WACV
Workshop Reviewer
SWOMO @ RSS 2025, WM @ ICML 2025, RINO @ CoRL 2025, Digital Twin @ ICCV 2025
Workshop Organizer
SWOMO @ RSS 2025, RINO @ CoRL 2025

Invited Talks

AnySyn3D Webinar 09/2025
Topic: Combining Physics and Learning for 3D Object Modeling and Simulation

3DCV Talk Series 08/2025
Topic: Particle-Grid Neural Dynamics for Learning Deformable Object Models from RGB-D Videos

TechBeat Talk Series 08/2024
Topic: AdaptiGraph: Material-Adaptive Graph-Based Neural Dynamics for Robotic Manipulation

Skills

Programming Languages: Python, C, C++
Python Frameworks: PyTorch, TensorFlow, Warp
Softwares and Tools: Git, LaTeX, Docker, ROS, Blender, Kubernetes