

Taiyuan Zhang

HB 6211, Dartmouth College, Hanover, NH 03755

✉ taiyuan.zhang.gr@dartmouth.edu | 🏠 <https://taiyuan-zhang.github.io/> | 🌐 <https://github.com/Taiyuan-Zhang>

Education

Dartmouth College

Hanover, New Hampshire, U.S.

M.S. IN COMPUTER SCIENCE (THESIS TRACK)

2023 - present

- Advisor: Prof. Bo Zhu

Nankai University

Tianjin, China

B.E. IN COMPUTER SCIENCE

2018 - 2022

- Advisor: Prof. Bo Ren
- Thesis: "Learning-based Advection Error Correction Network for Fluid Simulation Accelerating"

Publications

PUBLISHED

Jinjin He, **Taiyuan Zhang**, Hiroki Kobayashi, Atsushi Kawamoto, Yuqing Zhou, Tsuyoshi Nomura, Bo Zhu. *Multi-level Partition of Unity on Differentiable Moving Particles*. ACM Transactions on Graphics, 43, 6, Article 273, December 2024 (Proceedings of SIGGRAPH ASIA 2024).

Bo Ren*, Xiaohan Ye* (joint 1st authors), Zherong Pan, **Taiyuan Zhang**. *Versatile Control of Fluid-Directed Solid Objects Using Multi-Task Reinforcement Learning*. ACM Transactions on Graphics, 42, 2, Article 15, October 2022.

Research Experience

Shanghai Qi Zhi Institute

Shanghai, China

Research Intern, advised by Prof. Tao Du

Summer 2024

- Devise a parametric curve-based spacetime solver to maximize computing resource efficiency and accelerate simulations.

Georgia Institute of Technology

Georgia, U.S.

Research Intern (remote), advised by Prof. Bo Zhu

2023 - present

- Devise a level set method and surface tension model for the Particle Flow Maps method to simulate fluid with a free surface.
- Devise adaptive particle-based representations for dynamic implicit geometries and multiple differentiable tasks.

Nankai University, TMCC

Tianjin, China

Research Assistant, advised by Prof. Bo Ren

2022 - 2023

- Devise particle-based algorithms to simulate freezing dynamics on thin films, such as freezing soap bubbles.
- Devise an Eulerian-Lagrangian method for small-scale multi-phase fluid simulation.

Nankai University, TMCC

Tianjin, China

Research Intern, advised by Prof. Bo Ren

2021 - 2022

- (Bachelor's thesis) Devise an advection error correction convolutional neural network to accelerate fluid simulation.
- Implement fluid solvers (WCSPH, PCISPH, MPM, etc.) for multi-task reinforcement learning with coupled fluid-solid objects.

Nankai University, TMCC

Tianjin, China

Research Intern, advised by Prof. Ming-Ming Cheng

2019 - 2020

- Post overviews of *Nonlinear Regression via Deep Negative Correlation Learning* (TPAMI) on the China Society of Image and Graphics (CSIG) official account, with 2000+ views.
- Lead a team to 25th place out of 983 in the Zhengtu Cup Campus Machine Vision AI Competition, detecting defects in industrial parts using an encoder-decoder model.

Honors & Awards

2023-2025 Merit-based scholarship

Dartmouth College

2019 “Global Nankai” scholarship

Nankai University

2018 Second Place in High School Students Mathematics Contest in China
Third Place in High School Students Physics Contest in China

Teaching Experience

Fall 2024 **COSC 77/277 Computer Graphics** Teaching Assistant

Dartmouth College

- Host TA and x-hour sessions; deliver a talk on particle systems and grad programming assignments, readings, and quizzes.

Spring 2024 **COSC 70 Foundations of Applied Computer Science** Teaching Assistant

Dartmouth College

- Host TA sessions and grad programming assignments, readings, and quizzes.

Winter 2024 **COSC 74/274 Machine Learning and Statistical Data Analysis** Teaching Assistant

Dartmouth College

- Host TA sessions and grad programming assignments and quizzes.

Skills

- **Programming languages:** C/C++/C, Python, Java, JavaScript, GLSL
- **Software/Library:** Pytorch, Taichi, CUDA, Warp, Blender, Paraview, Houdini, Unity, Adobe Photoshop, Adobe Illustrator, Adobe Effects, Adobe Premiere
- **Language:** Chinese (native), English (fluent)