Mengdi Wang

915 West Peachtree St NW, Atlanta, GA 30309, USA mengdi.wang@gatech.edu 6033221138
wang-mengdi.github.io

Introduction

I am a PhD student at Georgia Tech in the School of Interactive Computing, majoring in Computer Science with a research focus on physics-based simulation in Computer Graphics, advised by Prof. Bo Zhu. I received my Bachelor degree of Computer Science at Peking University in 2020, advised by Prof. Baoquan Chen.

My overarching research goal is to empower diverse fields such as scientific discovery, video generation AI, and game visual effects through high-performance, large-scale GPU-based physical simulations. To this end, my work involves the development of novel numerical algorithms for simulating both large-scale physical phenomena on GPUs and complex geometric fluids, leading to multiple publications at top venues including SIGGRAPH and the Journal of Computational Physics (JCP).

Education

Georgia Institute of Technology, PhD of Computer Science (exp) 2024.1 - 2026.5(exp)

- School of Interactive Computing, advised by Prof. Bo Zhu.

Dartmouth College, Doctoral Program (Transferred to Georgia Tech) 2020.9 - 2023.12

- Guarini School, advised by Prof. Bo Zhu.

Peking University, Bachelor of Science *(summa cum laude)* 2016.9 - 2020.6

- School of Electronic and Computer Engineering.
- Research assistant in the Center on Frontiers of Computing Studies advised by Prof. Baoquan Chen.
- Bachelor's thesis: *A Fluid-Solid Coupling Simulation Algorithm Based on Immersed Boundary Method*.

Work Experience

Research Intern Los Angeles, CA
Lightspeed Studio, Tencent America 2024.5 - 2024.8

- Developed a knit fabric simulation algorithm based on yarn-crossing representation and optimization through physically inspired energy, enabling real-time simulation.
- Published the work as a co-first author paper to SIGGRAPH 2025.
- Mentor: Kui Wu

Research Intern Santa Clara, CA
NVIDIA Corps 2022.6 - 2022.9

- Developed a GPU-based high-performance geometric multigrid Poisson solver and a VOF-based interface tracking algorithm.
- Published the results to the Journal of Computational Physics (JCP).
- Mentors: Ken Museth, Eftychios Sifakis, Matthew Cong

Publications

Cirrus: Adaptive Hybrid Particle-Grid Flow Maps on GPU SIGGRAPH 2025

Mengdi Wang, Fan Feng, Junlin Li, Bo Zhu (Featured in video trailer)

Real-Time Knit Deformation and Rendering SIGGRAPH 2025

*Mengdi Wang**, Tao Huang*, Haoyang Shi*, (joint first authors), Yuxing Qiu, Yin Yang, Kui Wu

An Interface Tracking Method with Triangle Edge Cuts JCP 2025.1

Mengdi Wang, Matthew Cong, Bo Zhu

Hydrophobic and Hydrophilic Solid-Fluid Interaction SIGGRAPH ASIA 2022

Jinyuan Liu, *Mengdi Wang*, Fan Feng, Annie Tang, Qiqin Le, Bo Zhu

A moving eulerian-lagrangian particle method for thin film and foam simulation SIGGRAPH 2022

Yitong Deng, *Mengdi Wang*, Xiangxin Kong, Shiying Xiong, Zangyueyang Xian, Bo Zhu

A Clebsch method for free-surface vortical flow simulation SIGGRAPH 2022

Shiying Xiong, Zhecheng Wang, *Mengdi Wang*, Bo Zhu (Featured on video trailer)

Thin-film smoothed particle hydrodynamics fluid SIGGRAPH 2021

Mengdi Wang, Yitong Deng, Xiangxin Kong, Aditya H. Prasad, Shiying Xiong, Bo Zhu (Featured in video trailer)

Visual data analysis and simulation prediction for COVID-19 arXiv preprint 2020

Baoquan Chen, Mingyi Shi, Xingyu Ni, Liangwang Ruan, Hongda Jiang, Heyuan Yao, *Mengdi Wang*, Zhenhua Song, Qiang Zhou, Tong Ge

Teaching Experience

Instructor, Dartmouth College Fall 2021

COSC 294 Reading Course (graduate seminar).

Head Teaching Assistant, Dartmouth College Fall 2023

COSC 277 Computer Graphics by Prof. Wojciech Jarosz.

Teaching Assistant, Dartmouth College / Georgia Tech Multiple terms

Computer Graphics courses by Prof. Bo Zhu.

Presentations

Cirrus: Adaptive Hybrid Particle-Grid Flow Maps on GPU Aug. 2025

SIGGRAPH 2025, in-person

A moving eulerian-lagrangian particle method for thin film and foam simulation Aug. 2022

SIGGRAPH 2022, in-person

Thin-film smoothed particle hydrodynamics fluid Dec. 2021

212th Graphics and Mixed Environment Seminar (GAMES Webinar, invited online speaker)

Thin-film smoothed particle hydrodynamics fluid Aug. 2021

SIGGRAPH 2021, online

Professional Activities

Student Member, Association for Computing Machinery (ACM).

Reviewer, ACM SIGGRAPH (conference papers).

Reviewer, Journal of Computational Physics.

Awards and Honors

Chinese Government Award for Outstanding Self-financed Students Abroad 2024

Awarded by the China Scholarship Council

Kwang-Hua Scholarship 2018

Academic Year of 2017-2018

Peking University Programming Contest 2017

Second Prize (Rank 7th)

Award of Scientific Research 2017

Academic Year of 2016-2017

Lee Wai Wing Scholarship 2017

Academic Year of 2016-2017

ACM-ICPC Asia QingDao Regional Contest 2016

Gold Medal (Rank 4th)

18th National Olympiad in Informatics 2015

Gold Medal (Rank 11th)