Zhehao Li

✉ zhehaoli@mail.ustc.edu.cn ○ My Github

Education

University of Science and Technology of China   Hefei, China
– **M.S., Graphics & Geometric Computing Laboratory**   Sep. 2021 - Present
- Research topic: Differentiable Simulation
- Advisor: Prof. Ligang Liu

University of Science and Technology of China   Hefei, China
– **B.Eng. in Dept. of Computer Science**   Sep. 2017 - Jun. 2021
- Overall GPA: 91.07/100 (**Ranking: 3/253**)
- Outstanding Graduate (**Top 5%**)

Research Interest

I am interested in differentiable simulation for solving inverse control problems, and AI for simulation. My recent research is particularly focused on the following areas:

- **Differentiable Fluid Simulation**
  - Differentiable particle-based fluid-solid coupling
  - Sim-to-real of fluid-solid interaction to facilitate real-world robotics control.
- **AI + Simulation**
  - Accelerating complex cloth and deformable simulations with neural networks

Projects & Publications

DiffFR: Differentiable Particle-based Fluid-Rigid Coupling for Rigid Body Control
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2023)   May. 2023

**Zhehao Li**, Qingyu Xu, Xiaohan Ye, Bo Ren, Ligang Liu

- We investigate the instability in differentiating the particle-based fluid-rigid coupling simulator using SPH and present a feasible gradient computation scheme to address its differentiability.
- We present an efficient computational scheme to obtain the gradient of fluid-rigid coupling while avoiding the high computational cost to differentiate the entire high-DoF fluid system.
- We show the efficacy, scalability, and extensibility of our method in various fluid-rigid coupled rigid body control tasks, including multi-rigid systems and training neural network controllers.
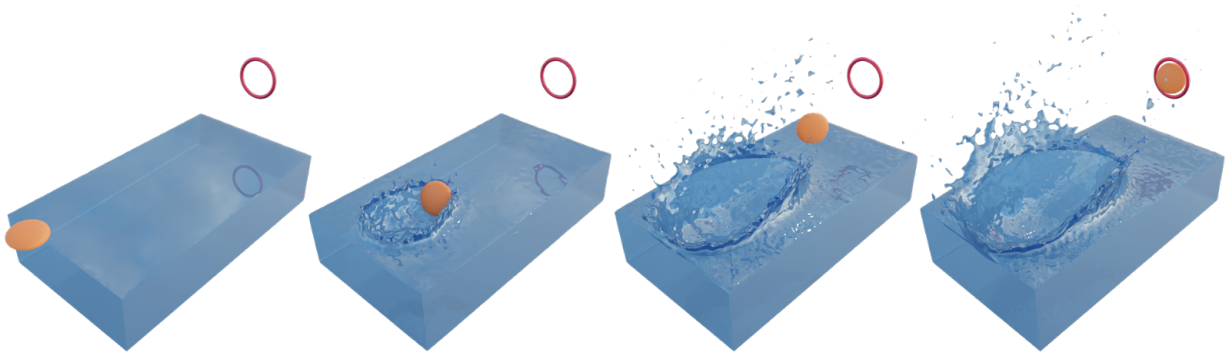
Computational Cushioning Package Design（Submitted to SIGGRAPH 2022） Jan. 2022

Zhang Di, **Zhehao Li**, Xiaoya Zhai, Xiao-Ming Fu, Ligang Liu

○ A computational model for efficient cushioning package design to ensure shipping safety of fragile items by geometric and topological optimization.
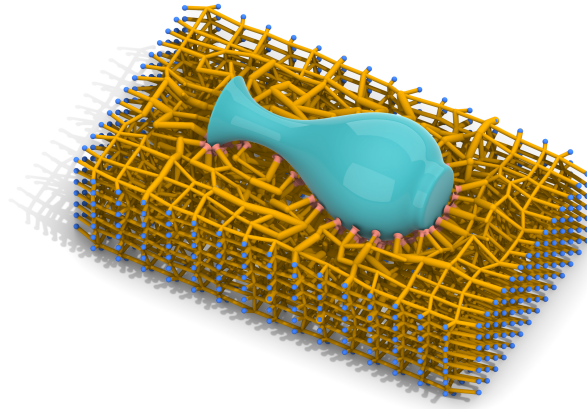
Teaching

SGI 2022: Summer Geometry Initiative | Online
– **Voluntary Assistant** | July 2022 - Oct. 2022

○ Organizer: Prof. Justin Solomon. MIT

GAMES103: Introduction to Physics-based Animation | Online
– **Teaching Assistant** | Oct. 2021 - Jan. 2022

○ Lecturer: Prof. Huamin Wang, Ohio State University

Taichi Graphics Course | Online
– **Teaching Assistant** | Sep. 2021 - Jan. 2022

○ Lecturer: Dr. Tiantian Liu, Taichi Graphics

Internship

University of Chicago | Chicago, USA
– **Research Intern, Human Computer Interaction Lab** | July. 2019 - Sep. 2019

○ Research Topic: Virtual Reality, Haptics in Biological Device
○ Advisor: Asst.Prof. Pedro Lopes

TikTok, Bytedance Inc. | Shenzhen, China
– **Industry Intern, Product RD and Infrastructure Department** | June. 2020 - Aug. 2020

○ Intern Topic: Continuous Collision Detection, Position-based Dynamics

Awards

○ Outstanding Graduate Award, USTC (Top5%) | Jun. 2021
○ Outstanding Student Scholarship - Golden Award, USTC (Top3% in 181) | Oct. 2018

Skills

○ Programming: C++, Python, Matlab, Taichi, PyTorch