Shiyang Jia | Résumé

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Research Interests

Physical simulation, Numerical optimization, Optimal control, Geometry processing

Education

University of California, San Diego — **San Diego, CA**
Ph.D. in Computer Science and Engineering — *Sep. 2021 – Present*
Advisors: Tzu-Mao Li and Albert Chern

Shanghai Jiao Tong University — **Shanghai, China**
B.S. in Computer Science and Engineering, Major GPA: 93.2/100 — *Sep. 2016 – Jul. 2020*
Zhiyuan Honor Program (an elite program for top 5% students)

Publication

Physical Cyclic Animations
Shiyang Jia, *Stephanie Wang, Tzu-Mao Li, Albert Chern*
Proceedings of the ACM on Computer Graphics and Interactive Techniques (**SCA 2023**)

Experience

miHoYo Inc. — **Shanghai, China**
Graphics Research Intern, Manager: Yanhui Huang — *Mar. 2021 – Aug. 2021*

- Tech transfer in Lumi (3D cartoon Vtuber) team worked on real-time cloth simulation in live streaming pipeline.
- Implemented a FEM-based cloth simulator supporting Projective Dynamics with dry frictional contacts.
- Build a keyframe control system for cloth simulation based on XPBD, adopt adjoint method for fast gradient evaluation, explored different numerical solvers for spacetime constraints optimization.

ShanghaiTech University, Flare lab — **Shanghai, China**
Research Assistant, Advisor: Xiaopei Liu — *Sep. 2020 – Jan 2021*

- Implemented a GPU cloth simulator including different membrane and bending energy models, different numerical optimization algorithms for solving implicit Euler time stepping, sparse matrix assembly and linear solve on GPU.

Microsoft Research Asia — **Beijing, China**
Research Intern, Advisor: Tiantian Liu — *Oct. 2019 – Jun. 2020*

- Developed a GPU collision handling algorithm for hair simulation that achieves 10x speedup over previous method.
- The key idea is to avoid expensive matrix inversion in linear complimentary problem by splitting mass matrix and elasticity hessian, then updating the vertex position and collision impulse in a Jacobi-style iteration. Implementation uses discrete elastic rod model.

Teaching

CSE 291 Physics Simulation — **UCSD**
Teaching Assistant, Instructor: Prof. Albert Chern — *2023 Spring*

- Around 30 graduate students. I helped with grading and holding office hours.

Awards

- Jacobs School of Engineering Fellowship — *2021*
- SJTU Outstanding Undergraduate Award (5%) — *2020*
- Spotlight & Most Popular Award in Google Girl's Hackthon — *2019*
- Zhiyuan Honor Scholarship (5%) — *2019*
- Academic Excellence Scholarship — *2017 – 2019*
- Honorable Mention in MCM/ICM — *2017*

Skills

Programming Languages: C/C++/C#, CUDA, Python, Javascript
Libraries: Intel MKL, cuBLAS, cuSOLVER, Eigen, OpenGL, OpenCV, Tensorflow, Taichi, D3.js, ROS
Tools: MATLAB, Houdini, Unity, Blender, LaTeX, Git
Languages: Chinese (native), English (professional)