Zixuan Lu

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Introduction

During undergraduate studies, I dedicated myself to studying applied mathematics and mechanics, while also receiving extensive training in engineering and computer science disciplines. As a graduate student, I expanded my interests to computer graphics and high-performance computation, gaining advanced research experience in physical-based animation and simulation. I am highly motivated to continue learning about computer graphics and implementing them with code magic.

Educational Background

Institute of Software, CAS & University of Chinese Academy of Sciences,
Applied Computer Science, *M.S. in pursuit*   2021.9 - 2024.6 (Hopely)

- **GPA**: 3.71 (avg 85/100, top 25%)
- Merit Student (2023)
- Academic Scholarship (2021, 2022)

University of Chinese Academy of Sciences, Theoretical and Applied Mechanics
(Yonghuai Guo Mechanics Experimental Class), *B.Eng.*   2017.9 - 2021.6

- **GPA**: 3.47 (avg 80/100)
- Yonghuai Guo Honorary Scholarships (2020, 2021)
- Graduation Project: Simplified model and CFD simulation of vascular bypass surgery, supervised by **Shizhao Wang**, at Institute of Mechanics, CAS.

Skills

- **Code Language**: C/C++ (advanced), CUDA (advanced), Python3, Shell, MATLAB, CMake
- **Graphic Pipeline**: OpenGL (advanced), Vulkan (a little), glsl
- **Theoretical and Numerical Framework**: CFD (FDM/FVM), FEM, MPM, Peridynamics, Continuum Mechanics (Tensor Analysis/Solid/Fuild Mechanics), Convex/Numerical/Intelligent Optimization
- **Language**: Chinese (native), English

Research experience

Institute of Biophysics, CAS   2020.6-2020.9

- Portable saccade and head-posture monitor instrument for pigeon and the study on its hemiencephalic dominance behavior.
- Training Program of Innovation and Entrepreneurship for Undergraduates. Supervised by **Yan Yang**.

Institute of Mechanics, CAS   2019.6-2020.6

- Mechanics of nonbuckling interconnects with prestrain for stretchable electronics. Supervised by **Yewang Su**.

Shenyang Institute of Automation, CAS   2018.7-2018.8

- The six-axis robotic arm kinematics. Awarded as "Excellent Summer Research Practice Project" by University of Chinese Academy of Sciences.

Publication

Journal

- **Lu, Z.**, Quo, L. & Zhao, H. Mechanics of nonbuckling interconnects with prestrain for stretchable electronics. Appl. Math. Mech.-Engl. Ed. 42, 689−702 (2021). https://doi.org/10.1007/s10483-021-2715-7

Conferences

CVM 2023   2023.4, Shenzhen

- **Zixuan Lu**, Xiaowei He, Yuzhong Guo, Xuehui Liu, Projective Peridynamic Modeling of Hyperelastic Membranes with Contact, http://iccvm.org/2023/papers/s9-1-334-TVCG.pdf
- Accepted as regular paper (oral presentation), recommended to **IEEE TVCG** and accepted in publish cycle.

- **Zixuan Lu**, Hao He, Di Wu, Xuehui Liu, Virtual Fiber-based Constitute Model for Anisotropic Material Design
- Recommended to **JCAD** (Chinese version) and accepted in publish cycle.

Patent
- Xiaowei He, **Zixuan Lu**, Xuehui Liu, A semi-implicit iterative simulation method for hyperelastic material based on peridynamics, CN2022117179422, in review.

HIGHLIGHT PROJECT

- **Preidyno** group member. Mainly be responsible for the development of hyperelastic solver, hyperelastic membrane solver and collision handling module. [public repo]
- **FEM_GL**, CPU-based FEM explicit/implicit integration framework with native OpenGL visualization. A repository of Chinagraph2022 conference project. [repo]
- **Evolutionary computing library**, code implementation of evolutionary computing algorithm (ACA/GA/PSO/SA/TS) for classical NP hard problems and combinatorial optimization problems. [repo]