Jingyi Long

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Education

Ph.D. **University of Utah**, Computing — Salt Lake City, Utah, U.S. — Sept 2023 – present

- GPA: 4.0/4.0
- I served as a research assistant in the Utah Graphics Lab, supervised by Prof. Yin Yang. I participated in several research projects and had one paper accepted by SIGGRAPH Asia.
- **Math-related Courses Taken**: MATH 6220 Complex Analysis, CS 6170 Computational Topology, MATH 6310 Modern Algebra I(On-going), MATH 6350 Commutative Algebra (On-going)

B.Eng. **Zhejiang University**, Computer Science — Hangzhou, Zhejiang, China — Sept 2019 – June 2023

- GPA: 3.9/4.0(94.44/100). Rank: 1 / 187
- **Minor in Mathematics**. 30+ credits completed in the math department.

Awards

- Chinese National Scholarship for Undergraduate (2021)

Introduction

I am currently a second-year Ph.D. at the University of Utah, doing research in Computer Graphics. My past research lies at the intersection of computational science and computer science. In particular, I study high-performance simulation of cloths and deformable objects with applications in Computer Graphics. However, as the computer graphics community shifts its interest to artificial intelligence and puts less and less emphasis on the mathematical rigorness of the algorithms, I decided to quit and pursue a Ph.D. program in pure mathematics instead.

During my undergraguate years, I have completed 30+ credits in the math department with decent grades (see the transcript for details). After I decided to apply for a math Ph.D. program, I took several math-related graduate courses and self-studied a few classic texts in the field of algebra.

The math-related publications and projects, including some of my personal solution manuals, are listed below.

Publications

Efficient Cloth Simulation Using Non-distance Barriers and Subspace Reuse — May 2024

Lei Lan, Zixuan Lu, **Jingyi Long**, Chun Yuan, Xuan Li, Xiaowei He, Huamin Wang, Chenfanfu Jiang, Yin Yang

ACM Transactions on Graphics (accepted)

Projects

Solution Manual to *Introduction To Commutative Algebra* by Atiyah and MacDonald — Nov 2024

- My personal solution manual to Atiyah-MacDonald, written in latex. The source file can be found here. (There are still a few problems unsolved.)
- Completed during a semester-long course of graduate commutative algebra.

Solution Manual to *Algebraic Curves* by William Fulton — Aug 2024

- My personal solution manual to Algebraic Curves by Fulton, the first 4 chapters are written by hand while the last 4 chapters are written in latex. The source files can be found here

Circular Coordinate Computation Using Persistent Cohomology May 2024

- Final project of CS 6170 Computational Topology
- An implementation of the paper Persistent Cohomology and Circular Coordinates and Branching and Circular Features in High Dimensional Data, which detect and visualize the circular and branching structure in high dimensional data by computing the persistent cohomology of the simplicial complex.
- The code can be found here.

Efficient Cloth Simulation Using Non-distance Barriers and Subspace Reuse May 2024

- The research project (later accepted into SIGGRAPH Asia 2024) mainly accelerates the simulation of cloths by separating the high frequency and low frequency part of the cloth dynamics. I was responsible for the design and verification of a novel efficient collision detection strategy.

Teaching Experience

- I served as a teaching assistant of CS 5610/6610 Interactive Computer Graphics, Spring 2024. During the course, I was responsible for answering questions in the Q&A session every week and grading part of the assignments.
- I help organize a semester-long Computer Graphics Seminar. During the seminar, I was responsible to host the weekly meeting.

Language Skills

- Mandarin(Native)
- English(TOEFL: R30 + L29 + S23 + W25)