Ruichen Liu

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Education

Boston University | Boston, MA — Sep 2025 - Present
Ph.D. in Computer Science, advised by Prof. Emily Whiting at Shape Design & Computation Lab

Research Interests: Computational Fabrication, 3D Printing, Computer Graphics, Human-Computer Interaction

Boston University | Boston, MA — Jan 2023 - May 2025
B.A. in Computer Science with Honors; GPA: 3.90/4.00; Magna Cum Laude; Dean's List

Coursework: Computational Fabrication, Computer Graphics, Linear Algebra

Purdue University | West Lafayette, IN — Aug 2021 - Dec 2022
Dual majors: Computer Science and Sound for the Performing Arts (transferred to Boston University)

GPA: 3.90/4.00; Dean's List & Semester Honors

Coursework: Game Development, OO-Programming, Discrete Mathematics; Music Theory, Composition, Sound Design

Publications

Rahul Mitra*, Mattéo Couplet*, **Ruichen Liu**, Jonathan Ng, Ruza Markov, William Batara Jeremiah Samosir, Megan Hofmann, and Edward Chien. "Surface Power Diagrams for Knit Singularity Placement." *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH 2026)*, 45(4), 2026. (*equal contribution)

Ruichen Liu and Emily Whiting. "CNC Titanium Anodization with a Modified Consumer Desktop FFF 3D Printer." *Adjunct Proceedings of the 10th ACM Symposium on Computational Fabrication (SCF Adjunct '25)*, Article 11, 1–3, 2026.

Research Experience

Game User Research Trainee, Mentorship Program | User Research, Report Writing, Data Processing — Nov 2022 - Apr 20
Tencent Games — Remo

- Trained in player-behavior and market research methods under Tencent researcher mentorship, producing 13 practice reports totaling 80,000+ words across rhythm, FPS, racing, and casual games
- Completed monthly team research exercises, presenting findings to mentors and iterating on their methodology feedback
- Wrote an analysis of social-media trends among Chinese youth, selected as the program's best piece of the month and featured on Tencent's news platform with 2,000+ views

Experience

Desktop Software Engineer Intern | C++, Python, Qt, SLA, SLS — Jun - Aug 2025; May - Aug 2026
Formlabs — Somerville, MA

- Returned for a second summer to develop PreForm features and support upcoming Formlabs printers
- Designed and implemented an efficient auto-fill algorithm for SLA build platforms, filling complex layouts in about 20 seconds for 100,000+ PreForm users worldwide
- Researched, documented, and evaluated fill-the-build algorithms with cross-functional partners to finalize the production approach
- Resolved a long-standing macOS Qt bundling issue in PreForm's Python bindings; improved X/Y scaling compensation UX and refactored printer-task code

Graphics Algorithms Engineer Intern | C++, Research, FDM — May 2024 - Aug 2024
Bambu Lab — Shanghai, China

- Designed path-planning graphics algorithms in Bambu Suite for the flagship H2D and H2S multi-toolhead 3D printers
- Designed and implemented G-code generation for new toolheads supporting laser engraving, vinyl cutting, and drawing

- Independently developed dynamic toolpath compensation for passive-knife vinyl cutting, improving vinyl-cut and draw-pen precision from 10 mm to 2 mm
- Investigated and drafted a technical solution for backend draw-pen and laser-engraving pipelines on curved surfaces
- Contributed 1,000+ lines of C++ and authored 10+ algorithm-design and experiment documents totaling 20,000+ words to support team knowledge transfer

Teaching

Teaching Fellow for CS 111 Spring 2026
Boston University Boston, MA
- Taught lab sections, answered student questions during lectures, and graded homework and exams

Grader for CS 581 Computational Fabrication Spring 2025
Boston University Boston, MA
- Graded assignments and assisted students with computational fabrication concepts and projects

Teaching Assistant for CS 480 / 680 Intro to Computer Graphics | Python, OpenGL Fall 2024
Boston University Boston, MA
- Supported 50+ students through lab instruction, office hours, Piazza, assignment guidance, and grading

Course Assistant for CS 237 Probability in Computing | Python, Jupyter Notebook Fall 2023 - Spring 2024
Boston University Boston, MA
- Co-led discussions for 30 students, held weekly office hours, answered Piazza questions, and graded assignments and exams

Academic Service

Reviewer, Eurographics 2026 Short Papers 2026
Ad hoc subreviewer, ACM SIGGRAPH 2026 Technical Papers 2026

Projects

Interactive Audio Designer, Student Game Team | Wwise, RTPC, Mixing 2025
Echo of the Dust: Best Game and Best Audio, 2025 China University Student Game Awards
- Collaborated with a student composer and sound designer to implement state-driven battle and boss music with beat-synchronized transitions, fades, and multi-stage boss logic
- Built RTPC-based spectral ducking to improve sound-effect clarity while preserving the overall soundscape
- Structured mix buses and applied compression and peak limiting to maintain consistent levels and dynamic range

Audio Programmer, Sound Designer, Student Game Team | Unity 3D, C#, Wwise May 2022 - Aug 2023
Stoneman's Adventure: 3rd Place, 2022 China University Student Game Awards
- Built the game's audio system in Unity and Wwise, covering event-driven sound effects, music, and in-engine integration
- Added semi-random playback to keep looping music and repeated effects varied across long play sessions

Honors & Awards

Dean's Fellowship, Boston University Fall 2025
Best Game Award, China University Student Game Awards 2025
Best Audio Award, China University Student Game Awards 2025
INDIE Live Expo 2023 Winter Official Selection Dec 2023
NetEase Mini-Game Finalist Nov 2023
3rd Place for the Ultimate Best Game Award, China University Student Game Awards Aug 2022

Skills

Programming Languages: Python, C++, Java, C#, C, LaTeX
Fabrication: 3D Printing, Laser Engraving, Passive Knife Cutting
Game Development: Unity, Wwise, Game Sound Design, Blender
Technical Skills: Qt, NumPy, Jupyter Notebook, Git, Flask