Chris Sha

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EDUCATION

Columbia University, *Fu Foundation School of Engineering and Applied Science* New York, NY

- Bachelor of Science in Applied Mathematics, GPA: 4.02
- Minors: Computer Science, Philosophy
- Expected Graduation: May 2026
- Relevant Coursework: Machine Learning, Robot Learning, Deep Learning for Robotics, Modern Analysis, Parallel Optimization, Probability Theory, Linear Algebra

RESEARCH EXPERIENCE

Undergraduate Research Assistant New York, NY

Robotic Perception, Interaction, and Learning Lab*, Columbia University* Sep. 2024 – Present

- Advisor: Yunzhu Li, Assistant Professor of Computer Science, Columbia University.
- Designed a teleoperation interface by integrating a residual RL policy to improve the quality of data collected during imitation learning for rigid-body dynamics tasks.
- Aiming for submission to the Conference of Robot Learning (CoRL) 2025.

Summer Intern Beijing, China

Multimodal Interaction Research Center*, Beijing Academy of Artificial Intelligence* Jun. 2024 – Sep. 2024

- Advisor: Zongqing Lu, Associate Professor of Computer Science, Peking University.
- Developed an autonomous end-to-end vision-based locomotion policy for Unitree H1 Humanoid robot, guided by a Video-Language Model (VLM) to perform parkour tasks.
- Enabled the VLM to select task-specific low-level policies (e.g., leaping, squat-walking, and hurdling) based on language instructions and visual inputs.
- Aiming for submission to the International Conference on Machine Learning (ICML) 2025.

Undergraduate Research Assistant New York, NY

The Accessible and Accelerated Robotics Lab*, Columbia University* Sep. 2023 – Dec. 2024

- Advisor: Brian Plancher, Assistant Professor of Computer Science, Barnard College.
- Implemented an online parameter estimation algorithm leveraging the Kaczmarz method to effectively address the overdeterminedness of online system identification problems.
- Aiming for submission to Robotics: Science and Systems (RSS) 2025.

Summer Intern Beijing, China

State Key Laboratory of Intelligent Control and Decision of Complex Systems*, Beijing Institute of Technology* Jun. 2023 – Sep. 2023

- Developed algorithms for registration, segmentation, and sample consensus of industrial parts point clouds using the Open3D library in Python.
- Collaborated with two lab members to enhance point cloud registration accuracy for objects with distinguishable geometric features, utilizing differential geometry methods for feature extraction.

High School Research Program Beijing, China

Beijing International Studies University, Department of Mathematics Jun. 2022 – Mar. 2023

- Advisor: Hua Zhu, Associate Professor of Mathematics, Beijing International Studies University.
- Analyzed the well-posedness of time-harmonic 2D Maxwell's equations that model the Transverse Magnetic Problem using variational formulation and constructed an internal approximation using the finite element method.

PUBLICATIONS

"Analysis of 2D Maxwell's equations in a time-harmonic regime", Journal of Mathematics Research, Canadian Center of Science and Education Apr. 2023

- Publication Details: Vol. 15, No. 2, April 2023 Issue (ISSN: 1916-9809).
- DOI: 10.5539/jmr.v15n2p1.

ACADEMIC HONORS

***Semi-finalist*, S.-T Yau High School Science Award** Jan. 2023

- Received the Regional Second Prize, a recognition of the top 8 teams in the Mainland China region, in a global science competition sponsored by Harvard mathematics professor Shing-Tung Yau that includes more than 5800 teams from over 1200 schools.

LEADERSHIP & OUTREACH

Student Advisor Irvine, CA

Math Community Education Outreach Program, UC Irvine Nov. 2022 – May 2023

- Taught pre-calculus to students at Carr Intermediate School, designing engaging problems to inspire interest in mathematics.
- Attended weekly coaching sessions to develop effective teaching strategies for middle school students.

SKILLS

Programming: Python, C++, MATLAB, CUDA, JAVA
Frameworks: PyTorch, Isaac Lab, OpenCV
Robots & Hardware: Unitree H1/G1/GO2, XArm, Franka Panda