

# Ruyu Yan

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Github: <https://github.com/yanruyu126>

## EDUCATION

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### Princeton University

*Ph.D. in Computer Science*

Princeton, NJ

Aug 2023 – Present

- M.A. in Computer Science awarded in 2025
- Research interests: AI for Content Creation, Computational Photography
- Advisor: Adam Finkelstein

### Cornell University

*B.S. in Computer Science | Minor in Psychology | GPA: 3.96*

Ithaca, NY

Aug 2019 – May 2023

- Honors in Computer Science, *Magna cum laude*
- Dean's List of College of Engineering
- Davis United World College Scholar
- Cornell Bowers Computing and Information Science Dream Grant receiver (Fall 2021)

## PUBLICATION

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Baiang Li\*, **Ruyu Yan\***, Ethan Tseng, Zhoutong Zhang, Adam Finkelstein, Jiawen Chen, and Felix Heide. Lucky high dynamic range imaging. *ACM Transactions on Graphics (TOG)*, 2026.

**Ruyu Yan**, Jiatian Sun, and Abe Davis. Chromaticity gradient mapping for interactive control of color contrast in images and video. *UIST '24*, 2024.

Ilya Chugunov, David Shustin, **Ruyu Yan**, Chenyang Lei, and Felix Heide. Neural spline fields for burst image fusion and layer separation. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2024.

Eric Ming Chen, Sidhanth Holalkere, **Ruyu Yan**, Kai Zhang, and Abe Davis. Ray conditioning: Trading photo-realism for photo-consistency in multi-view image generation. *IEEE/CVF International Conference on Computer Vision*, 2023.

**Ruyu Yan**, Jiatian Sun, Longxiulin Deng, and Abe Davis. Recapture: Ar-guided time-lapse photography. *UIST '22*, 2022.

## EXPERIENCE

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### Adobe

*Research Scientist/Engineer Intern*

San Jose, CA

May 2025 – Aug 2025

- Led research project in 3D panorama reconstruction.

### Adobe

*Research Scientist/Engineer Intern*

New York, NY

May 2024 – Aug 2024

- Led research project in computational perspective editing at capture time.

### Google

*Software Engineering Intern @ Chat iOS*

Sunnyvale, CA

Jun 2023 - Aug 2023

- Developed outbound sharing feature for the Chat iOS App that allows users to share messages from Chat to other Apps.

- Prototyped three UI designs of the sharing feature and interfaced with the UX team for the final decision.
- Designed data-layer API with publisher-subscriber pattern for asynchronously downloading files and authorizing media streaming.
- Integrated data privacy protection and user-facing error handling to the outbound sharing feature.

### **Cornell Vision and Graphics Lab**

Ithaca, NY

*Full-time Research Assistant*

Aug 2022 - Dec 2022

- Led the project of Color Gradient Curves, which aims to build an image/video processing system for performing edge-aware color tone mapping with a user-controlled notion of color contrast.
- Researched color temperature approximation algorithm and how it relates to perceptual brightness, and employed it on extending the perceived dynamic range of HDR images.
- Designed web interface for controlling non-linear adjustment on the color contrast with real-time visualization.
- Developed multi-pass pipeline for efficient image and video processing using WebGL, OpenGL, and Halide.

### **Summer Geometry Initiative @ MIT**

Remote

*Research Fellow*

Jul 2022 - Aug 2022

- **Making Deep Implicit Fields Local:** Studied recent literature on implicit neural representations of 3D geometry, and experimented with different auto-decoder-based architectures to extend the expressiveness of local details for large scenes.
- **Scene Mixing for 3D Point Clouds:** Developed various algorithms on dividing and re-assembling point clouds to generate new scenes with novel out-of-context environments.
- **SE(3) Invariant and Equivariant Neural Network for Geometry Processing:** Implemented SE(3) invariant point cloud classifier with PyTorch by augmenting the vanilla PointNet architecture with frame averaging operator.

## ACADEMIC PROJECTS

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### **ReCapture: AR-Guided Time-lapse Photography**

Ithaca, NY

*Research Assistant @ Abe Davis's Lab*

Jun 2021 - Oct 2022

- Researched an Augmented-Reality-based image sampling system for time-varying appearances, which helps the user create cool time-lapse video with sparse-sampled images using their mobile phone.
- Independently developed an iOS APP that provides intuitive guidance for how to pose the camera. Applied graphics techniques such as homography and reprojection for visualizing the varying appearances of a scene across time and space.
- Created a web interface using React and D3.js for visualizing image sample distribution and previewing time-lapse videos.

### **Handheld Unstructured Time-lapse Reconstruction**

Ithaca, NY

*Research Assistant @ Abe Davis's Lab*

Oct 2022 - Jan 2023

- Implemented baseline time-lapse reconstruction pipeline with Gaussian convolution in the time domain, which allows image sorting and filtering by time, angle of sun, and image global features.
- Applying structure from motion algorithms for extracting camera poses and depth maps from time-lapse image data. Researching representations for multi-plane time-lapse data and methods for smooth interpolation in latent domain.

## Real-time 3D Renderer for Chinese Ink Painting

Ithaca, NY

Graduate Course Project

Apr - May 2022

- Built a rasterization pipeline for rendering 3D scenes in the style of Chinese ink painting with interactive camera control.
- Created a novel brush stroke detection and painting algorithm for adaptively drawing the silhouette and interior of objects, which realistically simulates the effects of ink diffusion and varying stroke width.

## Monitoring Maize Phenotype with UAV Image via Computer Vision

Ithaca, NY

Graduate Course Project

Sep - Dec 2021

- Collaboratively research on extracting phenotype information of maize from aerial images and field data provided by the Robins Lab at Cornell University. Develop a self-supervised machine learning solution for differentiating genotypes of maize to support selective breeding.
- Applied signal analysis and feature matching methods to identify bounding boxes of crops in a field, and trained object detector for crops based on Faster-RCNN framework. Explored methods of embedding phenotype information with latent codes through variational auto-encoder.

## Minibot Remote Control and Path Planning

Ithaca, NY

Member of Cornell Cup Robotics

Feb - Dec 2022

- Worked on the prototype of a programmable robot Minibot dedicated to youth programming and robotics education.
- Implemented remote control feature with Xbox Controller and positioning feature with IMU and rotary encoder. Designed path planning algorithms based on ultrasonic sensor and vision system, and developed a 2D graphics-based software simulator for testing.

## SERVICE

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### Reviewing

- Eurographics 2026
- ACM UIST 2024
- ACM CHI Late-Breaking Work 2024

### Teaching

- Graduate Teaching Assistant at Princeton University
  - \* Computer Architecture and Organization (Fall 2024)
  - \* Computer Science: An Interdisciplinary Approach (Spring 2025)
  - \* Computer Graphics (Fall 2025)
- Undergraduate Teaching Assistant at Cornell University
  - \* Introduction to Computing Using Python (Fall 2020, Summer 2021)
  - \* Data Structures and Functional Programming (Spring 2021, Fall 2021)
  - \* Introduction to Computer Vision (Spring 2022, Spring 2023)
  - \* Introduction to Computer Graphics (Fall 2022)

### Talks and Panels

- **WeLight Lab, University of Hong Kong**: Invited lightning talk: *Beyond the Snapshot: Handheld HDR, Panorama, and Time-Lapse on Mobile*.
- **ACM UIST 2024**: Paper presentation: *Chromaticity Gradient Mapping for Interactive Control of Color Contrast in Images and Video*.

- **Cornell Graphics/Vision Seminar:** Seminar talk: *Designing Interactive Tools for Users in Photography and Image Toning*.
- **ACM UIST 2022:** Paper presentation: *ReCapture: AR-Guided Time-Lapse Photography*.
- **Cornell ACSU Research Night:** Panelist discussing undergraduate pathways into computer science research with an audience of 100+ students.

## **Mentoring and Outreach**

- **Cornell Rising Sophomore Summer Program in Computer Science:** Program supporting underrepresented and first-generation students in computer science. Served as TA for the functional programming course, peer-mentored four students over two years, and participated as a student panelist discussing research experiences.
- **CURIE Academy:** One-week program introducing female high school students to engineering disciplines. Facilitated ECE lectures and labs; mentored student groups on IoT system development.
- **Hello World: Intro to Programming:** Online course introducing middle school students in Xinjiang, China to programming. Taught introductory Scratch and Python to over 80 students.