

# Hanyu Chen

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## EDUCATION

### Cornell University

Aug 2024 – Present

Ph.D. in Computer Science

- Adviser: Prof. Noah Snavely

### Carnegie Mellon University

M.S. in Computer Science (QPA 4.08/4.3)

Jun 2023 – Jun 2024

- Advisor: Prof. Ioannis Gkioulekas

B.S. in Computer Science (QPA 3.94/4.0)

Sep 2019 – Jun 2023

- Additional major in Mathematics & minor in Computer Graphics

## RESEARCH INTERESTS

3D reconstruction, neural rendering, computer graphics, 3D computer vision

## PUBLICATIONS

### [1] 3D-Grounded Symmetry Detection for In-the-Wild Landmark Scenes

Hanyu Chen, Ruojin Cai, Steve Marschner, Noah Snavely

Under submission, 2025.

### [2] HairFormer: Transformer-Based Dynamic Neural Hair Simulation (arXiv)

Joy Xiaoji Zhang, Jingsen Zhu, Hanyu Chen, Steve Marschner

Under submission, 2025.

### [3] Doppelgangers++: Improved Visual Disambiguation with Geometric 3D Features (project link)

Yuanbo Xiangli, Ruojin Cai, Hanyu Chen, Jeffrey Byrne, and Noah Snavely

IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2024. **Highlight.**

### [4] 3D reconstruction with fast dipole sums (project link)

Hanyu Chen, Bailey Miller, and Ioannis Gkioulekas

ACM Transactions on Graphics (SIGGRAPH Asia), 2024

### [5] Objects as volumes: A stochastic geometry view of opaque solids (project link)

Bailey Miller, Hanyu Chen, Alice Lai, and Ioannis Gkioulekas

IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2024. **Best Student Paper Honorable Mention.**

## JOB EXPERIENCE

### Software Engineer Intern

Summer 2022

Map Engine Team, Nvidia

Santa Clara, CA (Remote)

- Curated dataset of ~200k road images with misalignment and calibration issues from map review issue logs. Trained an image classification model to detect invalid road images with a high recall rate, reducing workload for manual review.

### Algorithm Engineer Intern

Summer 2021

WLAN Team, Huawei

Beijing, China

- Simulated a 5GHz wireless network with ~150 access points in an office environment. Implemented bipartite matching and greedy depth-first search algorithms for dynamic channel allocation, minimizing co-channel interference.

## PROFESSIONAL SERVICE

### Teaching Assistant

- Data Structures and Functional Programming
- Computer Graphics Practicum
- Physics-based Rendering
- Algebraic Structures

Spring 2025 · Cornell

Fall 2024 · Cornell

Spring 2023 · CMU

Fall 2022 · CMU

**Reviewer:** CVPR, SIGGRAPH Asia

### **Adaptive LiDAR sampling based on free-flight uncertainty**

Fall 2023 · CMU

Computational Photography

- Developed a novel adaptive LiDAR sampling scheme for scanning objects by progressively placing samples at locations of high uncertainty, characterized by the entropy of the free-flight distribution of randomly sampled rays.

### **Differentiable rendering for optimizing local scene parameters**

Spring 2022 · CMU

Physics-based Rendering

- Implemented a path-tracing based renderer in C++ to compute gradients of a rendered image with respect to local scene parameters. Optimized material properties and lighting to match target images using gradient descent.

### **CUDA-Based bag-of-words scene recognition**

Spring 2022 · CMU

Parallel Computer Architecture and Programming

- Parallelized convolution, extraction, and clustering stages of a bag-of-words classifier in C++ and CUDA, resulting in a 50x speedup over a sequential algorithm, and an 8x speedup over a baseline OpenMP implementation.

### **Animating hand-drawn sketches using image autoencoders**

Fall 2021 · CMU

Visual Learning and Recognition

- Implemented a CNN-based autoencoder with an auxiliary discriminator network to animate hand-drawn sketches by interpolating between latent vectors and reconstructing keyframes.

## SKILLS

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**Languages:** C, C++, Python, OCaml, Standard ML

**Frameworks/Libraries:** PyTorch, OpenCV, Open3D, NumPy, Eigen, CUDA, OpenMP, Git