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] **HairFormer: Transformer-Based Dynamic Neural Hair Simulation** (arXiv)
Joy Xiaoji Zhang, Jingsen Zhu, **Hanyu Chen**, Steve Marschner
Under submission, 2025.

[2] **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**.

[3] **3D reconstruction with fast dipole sums** (project link)
Hanyu Chen, Bailey Miller, and Ioannis Gkioulekas
ACM Transactions on Graphics (SIGGRAPH Asia), 2024

[4] **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 Spring 2025 · Cornell
- Computer Graphics Practicum Fall 2024 · Cornell
- Physics-based Rendering Spring 2023 · CMU
- Algebraic Structures Fall 2022 · CMU

Reviewer: CVPR, SIGGRAPH Asia

Academic Projects

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

Languages: C, C++, Python, OCaml, Standard ML
Frameworks/Libraries: PyTorch, OpenCV, Open3D, NumPy, Eigen, CUDA, OpenMP, Git