Pengchong Hu

Detroit, MI — pchu@wayne.edu — (313) 392-3148

EDUCATION

Wayne State University, Detroit, MI, USA — Aug. 2022 - Present
Doctor of Philosophy in Computer Science — *Overall GPA: 3.97 / 4.00*

Tongji University, Shanghai, CHN — Sept. 2019 - June 2022
Master of Science in Computational Mathematics

Sichuan University, Chengdu, CHN — Sept. 2014 - June 2018
Bachelor in Mathematics and Applied Mathematics

PUBLICATIONS

Pengchong Hu, Zhizhong Han, "VTGaussian-SLAM: RGBD SLAM for Large Scale Scenes with Splatting View-Tied 3D Gaussians", **ICML**, 2025.

Pengchong Hu, Zhizhong Han, "Learning Neural Implicit through Volume Rendering with Attentive Depth Fusion Priors", **NeurIPS**, 2023.

PROFESSIONAL EXPERIENCE

Graduate Research Assistant — Detroit, MI
Wayne State University | Advisor: Prof. Zhizhong Han — May 2023 - Present

- Developed a novel **RGB SLAM system** leveraging large vision models.
  - Proposed a **composite flow prior** that fuses predictions from multiple large vision models to obtain robust dense correspondences for accurate SLAM.
  - Designed **parallel tracking and mapping strategies** within a bundle adjustment framework to improve system efficiency.
- Created **VTGaussian-SLAM**, an RGB-D SLAM system using view-tied 3D Gaussian Splatting.
  - Designed a simplified **view-tied Gaussian representation** that ties spherical Gaussians to depth pixels, reducing parameter storage by 64.3% while removing the need to learn 3D locations and rotations.
  - Introduced a **section-based tracking and mapping strategy** that organizes frames into local sections, enabling the optimization of only relevant Gaussians to reduce memory overhead and drift.
  - Implemented a **visibility-based overlap selection algorithm** to maintain spatial consistency and minimize pose error accumulation in long image sequences.

Graduate Fellow — Detroit, MI
Wayne State University | Advisor: Prof. Zhizhong Han — Aug. 2022 - May 2023

- Build a novel **volume rendering framework** with depth fusion priors.
  - Fused depth images into a depth prior for use in a proposed novel **volume rendering framework**.
  - Designed a novel **attention mechanism** and neural network architecture to learn attention weights for attentive depth fusion priors.

Graduate Teaching Assistant — Detroit, MI
Computer Science Department, Wayne State University — Aug. 2023 - Present

- Instructor and Grader for: Python Programming, Algorithms, and Deep Learning in 3D Computer Vision.
- Led lab sessions and evaluated student projects on deep learning architectures and 3D vision techniques.

SELECTED HONOURS & AWARDS

- Graduate Student Professional Travel Award, Wayne State University — May. 2025 & Sept. 2023
- Thomas C. Rumble University Graduate Fellowships, Wayne State University — Aug. 2022

SKILLS

- **Programming:** Python, PyTorch, MATLAB, C++.
- **Research Areas:** 3D Computer Vision, SLAM, 3D Gaussian Splatting, Neural Radiance Fields.
- **Language:** Mandarin (Native), English (Proficient).

ACADEMIC SERVICE

Conference Reviewer: ICML, NeurIPS, ICLR, CVPR, ICCV, IJCAI, AAAI, AISTATS