

Henry Che

Curriculum Vitae

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Research Interests

My research interest lies on the intersection of 3D Vision and Robotics, specifically on learning-based methods for safety-critical robotic navigation, perception, understanding, and simulation. My ambition is to assist our adventures into the open world with robust, generalizable autonomy systems, with an emphasis on autonomous driving.

Education

2021–2024 **University of Illinois, Urbana-Champaign (UIUC)**, Urbana, IL,
Bachelor of Science, Computer Engineering | GPA: 3.90/4.00.

Publications

- 2024 **[P1]** Vlas Zyraniov, **Henry Che**, Zhijian Liu, Shenlong Wang, "LidarDM: Generative LiDAR Simulation in a Generated World," *arXiv preprint*, 2024, [paper](#), [code](#)
- 2023 **[C1]** Yuxiang Zhao, Binyao Guo, **Henry Che**, Mohamad Alipour, "Developing Human Sensing Platforms for Digitizing Visual Inspections of Critical Infrastructure," *Structures Congress*, 2023, [paper](#)
- 2023 **[W1]** Muhammad Huzaifa, Boyuan Tian, Yihan Pang, **Henry Che**, Shenlong Wang, Sarita Adve, "AdaptiveFusion: Low Power Scene Reconstruction," *IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops*, 2023, [paper](#)

Ongoing Works

- Conference Paper **Uncertainty Quantification for Safety-Critical Autonomous Localization**,
Advised by *Prof. Shenlong Wang*, *First Author*.
- Bachelor Thesis **Learning-based Uncertainty-Quantifiable Perception for Robust Navigation**,
Advised by *Prof. Shenlong Wang*, *First Author*, To be submitted Dec. 2024.

Presentations

- Nov. 2024 **Undergraduate Research Symposium**, Urbana, IL, *To be presented*,
Learning-based Uncertainty-Quantifiable Robotic System for Robust Navigation.
- Apr. 2023 **NCSA Student Research Conference**, Urbana, IL,
Digital Twin Visualization Using Mixed Reality Technologies.

Research Experience

- Feb. 2025 – **Incoming Research Intern**, *Waabi*,
Aug. 2025 To be advised by *Prof. Raquel Utarsun*, Toronto, CA.
- Jul. 2023 – **Undergraduate Researcher**, *Shenlong's Computer Vision and Robotics Group*,
Present Advised by *Prof. Shenlong Wang*, Urbana, IL.

- Safety-critical self-driving evaluation with layout-aware sensor simulation **[P1]**
- Robust autonomy with uncertainty quantification
- Sep. 2021 – **Undergraduate Research Assistant**, *Illinois Extended Reality Testbed (ILLIXR)*,
Aug. 2023 Advised by *Prof. Sarita Adve*, Urbana, IL.
 - Robust head-tracking integration with OpenVINS, ORB-SLAM, Kimera
 - Real-time, 5x more efficient 3D scene reconstruction for AR/VR **[W1]**
- Sep. 2022 – **Research Intern**, *National Center for Super-computing Applications (NCSA)*,
Aug. 2023 Advised by *Prof. Mohamad Alipour*, Urbana, IL.
 - Interactive VR platform to manipulate&inspect SfM digital twins **[C1]**
- May 2022 – **Undergraduate Research Intern**, *Illinois CS Summer Research Program (SRP)*,
Jul. 2022 Advised by *Prof. Sarita Adve*, Remote.
 - Depth Fusion with Online Head Pose Tracking for AR/VR platform

Professional Experience

- May 2024 – **Software Engineering Intern, 3D Mapping**, *Zoox Inc, Foster City, CA*,
Aug. 2024 Mentored by Qi Fu, Elena Stumm.
 - Multi-modal HD Mapping Creation
- May 2023 – **Software Engineering Intern, 3D Simulation**, *Zoox Inc, Foster City, CA*,
Aug. 2023 Mentored by Anass Lasram, James Dolan.
 - Lidar Intensity Simulation R&D, improved accuracy by 65%

Teaching Experience

- Spring 2024 **Undergraduate Course Assistant**, *ECE484: Principle of Safe Autonomy, UIUC.*
- Fall 2023 **Undergraduate Course Assistant**, *ECE391: Computer System Engineering, UIUC.*

Honors and Awards

- 2023 **Illinois Engineering Outstanding Scholarship**, *UIUC.*
- 2023 **Engineering Visionary Scholarship**, *UIUC.*

Relevant Courseworks

- CS498 MPG Introduction to Machine Perception (Graduate Section)
- CS444 Deep Learning for Computer Vision
- CS446 Machine Learning
- ECE484 Principle of Safe Autonomy

Technical skills

- Languages Python, C/C++, C#
- Libraries NumPy/Scipy, Panda, Pytorch, Open3D, Eigen3, OpenCV, OpenGL, ROS, Gazebo
- Hardwares LiDAR (Velodyne, Ousters, Livox), Cameras (ZED, Realsense), GNSS, IMU
- Others Ubuntu, Vim, L^AT_EX, CMake, Bazel, Protocol Buffers, Unity