

Yuze He

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EDUCATION

Carnegie Mellon University

Postdoctoral Fellow in Computer Science Department (CSD)

- Advisors: Peter Steenkiste and Srinivasan Seshan

May 2024 - Present

Pittsburgh, USA

The Chinese University of Hong Kong

Ph.D. in Information Engineering (IE)

- Advisor: Guoliang Xing
- Thesis: Leveraging Infrastructure to Enhance Perception and Scene Understanding for Autonomous Driving

Sep 2019 - Dec 2023

Hong Kong, China

Zhejiang University

B.A.Sc. in Electrical Engineering (EE)

- Graduated with highest honors in electrical engineering

Sep 2015 - Jun 2019

Hangzhou, China

RESEARCH INTERESTS

My research develops intelligent infrastructures that enhance how mobile AI systems such as autonomous vehicles, AR glasses, and indoor robots perceive, learn, and adapt to the physical world. I explore how infrastructure nodes (e.g., roadside lampposts or indoor sensing units), mobile devices, and edge servers jointly develop collective perception and intelligence under constraints of compute, bandwidth, latency, and energy through system-level co-design of sensing, networking, and machine learning.

Keywords: Computer systems, mobile and edge computing, AI and machine learning systems, Infrastructure-assisted perception and mapping, proactive and adaptive sensing, cyber-physical systems, computer networking

HONORS AND AWARDS

- **Best Community Contribution Paper Award**, ACM MobiCom 2023 [[🔗](#)] 2023
- **Best Artifact Award**, ACM MobiCom 2024 [[🔗](#)] 2024
- **Best Artifact Award Runner-up**, ACM MobiCom 2024 [[🔗](#)] 2024
- **Best Demo Award Runner-up**, ACM MobiCom 2024 [[🔗](#)] 2024
- **EECS Rising Star**, MIT [[🔗](#)] 2024
- **Doctoral Dissertation Award**, ACM SIGBED China (3 granted annually nationwide) 2024
- **Gold Prize**, 49th International Exhibition of Inventions Geneva 2024
- **Best Paper Award**, The 2023 International Doctoral Forum [[🔗](#)] 2023
- **N2Women Young Researcher Fellowship**, ACM MobiCom 2023 [[🔗](#)] 2023
- **Outstanding Bachelor Dissertation Award**, College of Electrical Engineering, Zhejiang University 2019
- **First Prize**, National Automation System Application Contest, China 2018
- **First Prize** (Rank: 6/230), Undergraduate Electronic Design Contest, Zhejiang Province 2018
- **First Prize** (Rank: 2/67), Undergraduate Smart Car Race, Zhejiang Province 2018

PUBLICATIONS

*Equal contribution (authors listed interchangeably) †Student mentored by Yuze He ‡Co-primary authors

- [1] **Yuze He**, Ferdi Kossmann, Srinivasan Seshan, Peter Steenkiste. "ECCO: Leveraging Cross-Camera Correlations for Efficient Live Video Continuous Learning". In Submission. URL: [🔗](#)
- [2] **Yuze He***, Jiahe Cui[†], Jianwei Niu, Zhenchao Ouyang, Guoliang Xing. " α LiDAR: An Adaptive High-Resolution Panoramic LiDAR System". In Proceedings of the 30th Annual International Conference on Mobile Computing and Networking (**MobiCom '24**). URL: [🔗](#)
Best Artifact Award (2 of 494 submissions) and **Best Demo Award Runner-up**
Open-source release with **194 GitHub stars** and **6k YouTube demo views** Code: [🔗](#) Demo video: [▶](#)
- [3] **Yuze He**, Chen Bian, Jingfei Xia, Shuyao Shi, Zhenyu Yan, Qun Song, Guoliang Xing. "VI-Map: Infrastructure-Assisted Real-Time HD Mapping for Autonomous Driving". In Proceedings of the 29th Annual International Conference on Mobile Computing and Networking (**MobiCom '23**). URL: [🔗](#)
Best Community Contribution Paper Award (2 of 377 submissions) Code: [🔗](#) Demo video: [▶](#)
- [4] **Yuze He**, Li Ma, Jiahe Cui, Zhenyu Yan, Guoliang Xing, Sen Wang, Qintao Hu, Chen Pan. "AutoMatch: Leveraging Traffic Cameras to Improve Perception and Localization of Autonomous Vehicles". In Proceedings of the 20th ACM Conference on Embedded Networked Sensor Systems (**SenSys '22**). URL: [🔗](#)
- [5] **Yuze He**, Li Ma, Zhehao Jiang, Yi Tang, Guoliang Xing. "VI-Eye: Semantic-Based 3D Point Cloud Registration for Infrastructure-Assisted Autonomous Driving". In Proceedings of the 27th Annual International Conference on Mobile Computing and Networking (**MobiCom '21**). URL: [🔗](#)
- [6] Jingfei Xia[†], **Yuze He**, Chen Bian, Zhenyu Yan, Guoliang Xing. "EventEye: Towards High-Frequency Perception Enhancement for Autonomous Vehicles Using Infrastructure-Mounted Event Cameras". To appear in **SenSys '26**. URL: [🔗](#)
- [7] Neiwen Ling[‡], **Yuze He**[‡], Nan Guan, Heming Fu, Guoliang Xing "An Indoor Smart Traffic Dataset and Data Collection System". In Proceedings of the 20th ACM Conference on Embedded Networked Sensor Systems (**SenSys '22 Workshop Paper**). URL: [🔗](#)
- [8] Jiahe Cui, Shuyao Shi, **Yuze He**, Jianwei Niu, Guoliang Xing, Zhenchao Ouyang. "VILAM: Infrastructure-Assisted 3D Visual Localization and Mapping for Autonomous Driving". In Proceedings of the 21st USENIX Symposium on Networked Systems Design and Implementation (**NSDI '24**). URL: [🔗](#)
- [9] Shuyao Shi[‡], Neiwen Ling[‡], Zhehao Jiang[‡], Xuan Huang[‡], **Yuze He**, Xiaoguang Zhao, Bufang Yang, Chen Bian, Jingfei Xia, Zhenyu Yan, Raymond W. Yeung, Guoliang Xing. "Soar: Design and Deployment of a Smart Roadside Infrastructure System for Autonomous Driving". In Proceedings of the 30th Annual International Conference on Mobile Computing and Networking (**MobiCom '24**). **Best Artifact Award Runner-up**. URL: [🔗](#)
- [10] Linlin Tu, Xiaomin Ouyang, Jiayu Zhou, **Yuze He**, Guoliang Xing. "FedDL: Federated learning via dynamic layer sharing for human activity recognition". In Proceedings of the 19th ACM Conference on Embedded Networked Sensor Systems (**SenSys '21**). URL: [🔗](#)
- [11] Neiwen Ling, Kai Wang, **Yuze He**, Guoliang Xing, Daqi Xie. "Rt-mDL: Supporting real-time mixed deep learning tasks on edge platforms". In Proceedings of the 19th ACM Conference on Embedded Networked Sensor Systems (**SenSys '21**). URL: [🔗](#)

PATENTS

- [1] Guoliang Xing, **Yuze He**. "Method for Infrastructure-Assisted Real-Time HD Mapping for Autonomous Driving". US Application No: 63/586,109

PROPOSAL WRITING EXPERIENCE

NSF VINES Track 2 Proposal

Sep 2025

PI: Vyas Sekar, Anthony Rowe, Srinivasan Seshan, Mayank Goel, Henny Admoni (CMU, Lead); Kittipat Apichart-trisorn, Eugene Chai, TV Lakshman (Nokia Bell Labs); Dave Levin, Amanda Lazar (UMD); Mallesh Dasari (North-eastern); Elahe Soltanaghaei (UIUC).

Role: Contributed to writing one technical thrust and developed visualizations for three use cases.

ACADEMIC SERVICE

Program Committee:

- MobiSys 2025
- IoTDI 2023–2024 (Poster and Demo Tracks)

Artifact Evaluation Committee:

- NSDI 2026
- MobiCom 2024
- MobiSys 2024

Invited Reviewer (Conferences):

- IEEE VR 2026
- CVPR 2024–2026
- ICCV 2025
- ECCV 2025
- ICRA 2024
- INFOCOM 2024

Invited Reviewer (Journals):

- Transactions on Mobile Computing (TMC) 2024–2025
- ACM Transactions on Computing for Healthcare 2024

Organizer and Moderator:

- ACM MobiCom 2023 N2Women Event

[[🔗](#)]

Event Organizer:

- 17th F1TENTH Autonomous Grand Prix at CPS-IoT Week 2024

[[🔗](#)]

Poster Co-Chair:

- Advanced Study Institute 2023 – AI for Internet of Things

[[🔗](#)]

TEACHING EXPERIENCE

Computer Networks (IERG3310/ESTR3310)

Graduate Teaching Assistant

Fall 2021

CUHK

Computer Networks (IERG3310/ESTR3310)

Graduate Teaching Assistant

Spring 2021

CUHK

Multivariable Calculus for Engineers (ENGG1130)

Undergraduate Teaching Assistant

Spring 2020

CUHK

MENTORING EXPERIENCE

Sruti Srinidhi

Sep 2025 - Present

Ph.D. Student, CMU

- Mentoring ongoing research on using 2D/3D capture with visual-language models (VLMs) to enable scalable visual search in large indoor environments.

Yoo Chan (Josh) Joung

May 2024 - Aug 2024

M.S. Student, CMU

- Mentored a summer project on lightweight network telemetry.

Sanjeev Sridhar

May 2024 - Aug 2024

M.S. Student, CMU

- Mentored the same summer project with Josh.

Jingfei Xia

Oct 2022 - Jun 2024

Ph.D. Student, CUHK

- Guided Jingfei's first Ph.D. research project on infrastructure-assisted autonomous driving. Mentored the design, experiments, and paper development of *EventEye* [6], which was later accepted to *SenSys '26*.

Jiahe Cui

June 2022 - May 2024

Visiting Ph.D. Student, CUHK

- Mentored a project on active LiDAR system design, leading to the co-first-authored paper α LiDAR (MobiCom '24) [2], which received both the **Best Artifact Paper Award** and **Best Demo Award Runner-up**.

RESEARCH TALKS

Building Intelligent Infrastructure for Mobile Systems

Oct 2025

CMU Living Edge Lab

Optimizing Streaming of 3D Gaussian Splatting for Large-Scale Virtual Environments

Apr 2025

CMU Living Edge Lab

ECCO: Leveraging Cross-Camera Correlations for Efficient Live Video Continuous Learning

Feb 2025

CMU Living Edge Lab

Infrastructure-Assisted Autonomous Driving: From Perception to HD Mapping

Sep 2024

University of Pittsburgh, Computer Science Department Colloquium

Infrastructure-Assisted Perception and Scene Understanding for Autonomous Driving

Dec 2023

CMU, Hosts: Peter Steenkiste and Srinivasan Seshan

VI-Map: Infrastructure-Assisted Real-Time HD Mapping

Oct 2023

Presented at ACM MobiCom 2023

AutoMatch: Leveraging Traffic Cameras for Vehicle Perception and Localization

Nov 2022

Presented at ACM SenSys 2022

VI-Eye: Semantic 3D Point Cloud Registration between Infrastructure and Vehicles

Mar 2022

Presented at ACM MobiCom 2021 (Online)

REFERENCES

Peter Steenkiste

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Electrical and Computer Engineering
Carnegie Mellon University

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Relationship: Postdoctoral Advisor

Guoliang Xing

Professor in Department of Information
Engineering

The Chinese University of Hong Kong

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Relationship: Ph.D. Advisor

Chunming Qiao

Professor and Chair of the Computer Science and
Engineering Department

University at Buffalo

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*Relationship: Thesis Committee Member, Academic
Mentor*

Srinivasan Seshan

Professor in Computer Science Department
Carnegie Mellon University

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Relationship: Postdoctoral Advisor

Mahadev Satyanarayanan

Professor in Computer Science Department
Carnegie Mellon University

satya@cs.cmu.edu

Relationship: Academic Mentor