Yuze He

GHC 9118, 5000 Forbes Avenue, Pittsburgh, PA 15213
yuzeh@cs.cmu.edu | Personal Website | yuzehh | Google Scholar

Education

Carnegie Mellon University *Apr 2024 - Present*
Postdoctoral Fellow in Computer Science Department (CSD) Pittsburgh, USA
- Advisors: Peter Steenkiste and Srinivasan Seshan

The Chinese University of Hong Kong *Sep 2019 - Dec 2023*
Ph.D. in Information Engineering (IE) Hong Kong, China
- Advisor: Guoliang Xing
- Thesis: Leveraging Infrastructure to Enhance Perception and Scene Understanding for Autonomous Driving

Zhejiang University *Sep 2015 - Jun 2019*
B.A.Sc. in Electrical Engineering (EE) Hangzhou, China
- Graduated with highest honors in electrical engineering

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, computer networking, cyber-physical systems, proactive and collaborative sensing

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". Submitted to *USENIX NSDI* 2026, under review. *URL:*

[2] **Yuze He***, Jiahe Cui*†, Jianwei Niu, Zhenchao Ouyang, Guoliang Xing. "αLiDAR: 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 190 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 Apicharttrisorn, Eugene Chai, TV Lakshman (Nokia Bell Labs); Dave Levin, Amanda Lazar (UMD); Mallesh Dasari (Northeastern); Elahe Soltanaghaei (UIUC).

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

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) *Fall 2021*
Graduate Teaching Assistant *CUHK*

Computer Networks (IERG3310/ESTR3310) *Spring 2021*
Graduate Teaching Assistant *CUHK*

Multivariable Calculus for Engineers (ENGG1130) *Spring 2020*
Undergraduate Teaching Assistant *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 αLiDAR (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
Professor in Computer Science Department and Electrical and Computer Engineering
Carnegie Mellon University
prs@cs.cmu.edu
Relationship: Postdoctoral Advisor

Guoliang Xing
Professor in Department of Information Engineering
The Chinese University of Hong Kong
glxing@cuhk.edu.hk
Relationship: Ph.D. Advisor

Chunming Qiao
Professor and Chair of the Computer Science and Engineering Department
University at Buffalo
qiao@buffalo.edu
Relationship: Thesis Committee Member, Academic Mentor

Srinivasan Seshan
Professor in Computer Science Department
Carnegie Mellon University
srini@cs.cmu.edu
Relationship: Postdoctoral Advisor

Mahadev Satyanarayanan
Professor in Computer Science Department
Carnegie Mellon University
satya@cs.cmu.edu
Relationship: Academic Mentor