Yuliang Guo

Redwood City, CA, USA
Tel: 401-573-0093 | Email: 33yuliangguo@gmail.com | Personal Website | Google Scholar | Linkedin

RESEARCH INTERESTS

Computer Vision, 3D Vision, Embodied AI – My research focuses on developing **active 3D perception methods** adaptable across diverse embodiments and **automating the creation of interactive digital twins** of real-world environments. The ultimate goal is to **enable intelligent human-AI interactions** and advance **physical AI** for greater autonomy and adaptability.

EDUCATION

Brown University
- Ph.D. in Computer Science, Advised by Benjamin Kimia, Thomas Serre — 2012-2018
- M.S. in Computer Engineering, Advised by Benjamin Kimia — 2009-2011

Shanghai Jiao Tong University
- B.S. in Material Science — 2005-2009

INDUSTRIAL EXPERIENCE

Bosch Research, Sunnyvale, CA
- Lead Research Scientist (Tech Lead), Managed by Liu Ren — 2024-Now
- Senior Research Scientist (Tech Lead), — 2021-2023

➢ Universal representation for cross-camera, cross-embodiment perception and AI
➢ Interactable 3D world reconstruction for robot navigation and manipulation
➢ Active vision and spatial computing for augmented reality (AR) in industrial assembly assistance
➢ Precision 3D perception for advanced vehicle parking assistance

OPPO Research, Palo Alto, CA
- Senior Research Scientist, Managed by Yi Xu — 2019-2020

➢ Real-time human posture estimation for avatar motion control
➢ 3D perception and reconstruction for AR devices

Baidu USA, Sunnyvale, CA
- Senior Research Engineer, Managed by Tae Eun Choi — 2018-2019

➢ 3D perception system for Apollo autonomous driving platform

SELECTED PUBLICATIONS

† Project Lead / Corresponding Author

1. "Depth Any Camera: Zero-Shot Metric Depth Estimation from Any Camera", **Yuliang Guo**†, Sparsh Garg, S. Mahdi H. Miangoleh, Xinyu Huang, Liu Ren, CVPR 2025

2. “Online Language Splatting”, Saimouli Katragadda, Cho-Ying Wu, **Yuliang Guo**†, Xinyu Huang, Guoquan Huang, Liu Ren, arXiv 2025
3. “SMART: Advancing Scalable Map Priors for Driving Topology Reasoning”, Junjie Ye, David Paz, Hengyuan Zhang, **Yuliang Guo**, Xinyu Huang, Henrik I. Christensen, Yue Wang, Liu Ren, ICRA 2025
4. “SUP-NeRF: A Streamlined Unification of Pose Estimation and NeRF for Monocular 3D Object Reconstruction”, **Yuliang Guo**†, Abhinav Kumar, Cheng Zhao, Ruoyu Wang, Xinyu Huang, Liu Ren, ECCV 2024
5. “TCLC-GS: Tightly Coupled LiDAR-Camera Gaussian Splatting for Surrounding Autonomous Driving Scenes”, Cheng Zhao, Su Sun, Ruoyu Wang, **Yuliang Guo**, Junjun Wan, Zhou Huang, Xinyu Huang, Victor Chen, Liu Ren, ECCV 2024
6. “SeaBird: Segmentation in Bird’s View with Dice Loss Improves Monocular 3D Detection of Large Objects”, Abhinav Kumar†, **Yuliang Guo**†, Xinyu Huang, Liu Ren, Xiaoming Liu, CVPR 2024
7. “Enhancing Online Road Network Perception and Reasoning with Standard Definition Maps”, Hengyuan Zhang, David Paz, **Yuliang Guo**, Arun Das, Xinyu Huang, Haug Karsten, Henrik Iskov Christensen, Liu Ren, IROS 2024
8. “Behind the Veil: Enhanced Indoor 3D Scene Reconstruction with Occluded Surfaces Completion”, Su Sun, Cheng Zhao†, **Yuliang Guo**†, Ruoyu Wang, Xinyu Huang, Victor Chen, Liu Ren, CVPR 2024
9. “3D Copy-Paste: Physically-Plausible Object Insertion for Monocular 3D Detection”, Yuhao Ge, Hong-Xing Yu, Cheng Zhao, **Yuliang Guo**, Xinyu Huang, Liu Ren, Laurent Itti, Jiajun Wu, NeurIPS 2023
10. “Symmetry and Uncertainty-Aware Object SLAM for 6DoF Object Pose Estimation”, Nathaniel Merrill†, **Yuliang Guo**†, Xingxing Zuo, Xinyu Huang, Stefan Leutenegger, Xi Peng, Liu Ren, Guoquan Huang, CVPR, 2022
11. “OmniFusion: 360 Monocular Depth Estimation via Geometry-Aware Fusion”, Yuyan Li, **Yuliang Guo**†, Zhixin Yan, Xinyu Huang, Ye Duan, Liu Ren, CVPR (**Oral Presentation**) 2022
12. “PoP-Net: Pose over Parts Network for Multi-Person 3D Pose Estimation from a Depth Image”, **Yuliang Guo**†**,** Zhong Li, Zekun Li, Xiangyu Du, Shuxue Quan, Yi Xu, WACV 2022
13. “Gen-LaneNet: a generalized and scalable approach for 3D lane detection”, **Yuliang Guo**†, Guang Chen, Peitao Zhao, Weide Zhang, Jinghao Miao, Jingao Wang, Tae Eun Choe, ECCV 2020
14. “Robust pose tracking with a joint model of appearance and shape”, **Yuliang Guo**†, Lakshmi N. Govindarajan, Benjamin B. Kimia, Thomas Serre, arXiv, 2018
15. “Differential Geometry in Edge Detection: accurate estimation of position, orientation and curvature”, Benjamin B. Kimia, Xiaoyan Li, **Yuliang Guo**† , Amir Tamrakar, TPAMI 2018
16. “A systematic comparison between visual cues for boundary detection”, David A. Mely, Junkyung Kim, Mason McGill, **Yuliang Guo**, Thomas Serre, Vision Research 2016
17. "A Multi-stage Approach to Curve Extraction", **Yuliang Guo**†, Naman Kumar, Maruthi Narayanan, Benjamin B Kimia, ECCV 2014

ENTERPRISE SOLUTIONS

- ➢ Demonstrated Bosch's video-only parking solution to automotive clients at Bosch Experience Day 2024
- ➢ Developed AR-assisted assembly production lines at Bosch-Siemens Appliance factories in 2022
- ➢ Contributed to the Baidu Apollo autonomous driving platform, the first AD open platform in 2019