Yuliang Guo

Redwood City, CA, USA

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RESEARCH INTERESTS

Computer Vision, 3D Vision, Embodied AI

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

- Foundational 3D perception cross cameras and embodiments
- Semantic reconstruction and mapping for robot navigation and manipulation
- Augmented reality (AR) in industrial assembly assistance
- Precision camera 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

1. "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
2. "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
3. "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

4. "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

5. "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

6. "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

7. "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

8. "Robust pose tracking with a joint model of appearance and shape", **Yuliang Guo**[†], Lakshmi N. Govindarajan, Benjamin B. Kimia, Thomas Serre, arXiv, 2018

9. "Differential Geometry in Edge Detection: accurate estimation of position, orientation and curvature", Benjamin B. Kimia, Xiaoyan Li, **Yuliang Guo**, Amir Tamrakar, TPAMI 2018

10. "A systematic comparison between visual cues for boundary detection", David A. Mely, Junkyung Kim, Mason McGill, **Yuliang Guo**, Thomas Serre, Vision Research 2016

11. "A Multi-stage Approach to Curve Extraction", **Yuliang Guo**[†], Naman Kumar, Maruthi Narayanan, Benjamin B Kimia, ECCV 2014

IN SUBMISSION

1. "MeDAC: Metric Depth from Any Camera", **Yuliang Guo**[†], Mahdi Miangoleh, Xinyu Huang, Yağız Aksoy, Liu Ren, NeurIPS 2024

2. "LieConv: Lie Convolutions for Viewpoint Robustness in Monocular 3D Perception", Abhinav Kumar[†], **Yuliang Guo**[†], Ruoyu Wang, Cheng Zhao, Xinyu Huang, Liu Ren, Xiaoming Liu, NeurIPS 2024

3. "Grounding LLM for Visual Navigation via 3D Scene Graphs", Jiading Fang[†], **Yuliang Guo**[†], Christian Juette, Xinyu Huang, Matthew R. Walter, Liu Ren, NeurIPS 2024

4. "UPNeRF: A Unified Framework for Monocular 3D Object Reconstruction and Pose Estimation", **Yuliang Guo**[†], Abhinav Kumar, Cheng Zhao, Ruoyu Wang, Xinyu Huang, Liu Ren, ECCV 2024

5. "HybridOCC: Hybrid-resolution Semantic Occupancy Perception via Object-centric Surface Reconstruction", Chao Chen, Ruoyu Wang, Cheng Zhao, **Yuliang Guo**, Xinyu Huang, Chen Feng, Liu Ren, ECCV 2024

6. "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

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

TECHNICAL SKILLS

Programming: python, C/C++, Matlab
Applications/library platform: Pytorch, OpenCV, Tenterflow