

# Yunhan Zhao

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**RESEARCH INTERESTS** Computer vision, machine learning, 3D scene understanding, monocular depth estimation, 3D from multi-view and sensors, camera pose estimation, egocentric vision, domain adaptation, generative models

**ACADEMIC BACKGROUND** **University of California, Irvine** Sep. 2019 - present  
*Ph.D. in Computer Science*  
• Advisor: Charless Fowlkes

**Johns Hopkins University** May. 2019  
*M.S. in Applied Mathematics and Statistics*  
• Optimization and Operation Research Track

*M.S. in Robotics* May. 2018  
• Advisor: Alan Yuille  
• Perception and Cognitive Track

**Binghamton University, State University of New York** May. 2016  
*B.S. in Mechanical Engineering*  
• Cumulative GPA: 3.90/4.0; Summa Cum Laude  
• Transferred from Southeast University, Nanjing, China

**RESEARCH EXPERIENCE** **Google AR** Mountain View, CA Jun. 2023 - Sep. 2023  
*SWE Internship, Advisor: Neil Goeckner-Wald*  
• Proposed and implemented a transformer-based image enhancement pipeline specifically for improving text clarity on the AR/VR device.  
• Designed a new quantitative metric that measures the text clarity of enhanced images by leveraging the optical character recognition (OCR) scores.

**Adobe Research** Remote Jun. 2022 - Sep. 2022  
*Research Internship, Advisor: Connelly Barnes*  
• Advanced 3D-aware generative models that allow video synthesis from one single image with user-defined camera trajectories.  
• Implemented an efficient ray-sampling approach that allows fast and stable learning with differentiable neural renders.

*Research Internship, Advisor: Connelly Barnes* Jun. 2021 - Dec. 2021  
• Improved the reference-based image inpainting model under complex scene geometry.  
• Proposed GeoFill, a novel optimization-based 3D-aware warping module that achieves state-of-the-art performance.

**Carnegie Mellon University, The Robotics Institute** Remote Jun 2020 - Sep 2020  
*Research Assistant, Advisor: Deva Ramanan and Shu Kong*

- Explored the problem of LiDAR densification in autonomous driving for better downstream tasks, such as 3D object detection.
- Successfully densified LiDAR sweeps by adopting monocular depth completion with camera egomotion compensation.

**Johns Hopkins University, CCVL** Baltimore, MD  
*Research Assistant, Advisor: Alan Yuille* Feb. 2018 - May. 2019

- Improved the object classification accuracy by complementing training sets with self-generated “hard” examples.
- Proposed ITNs that achieved state-of-the-art classification performances on several benchmark datasets.

**Massachusetts Institute of Technology, CoCoSci** Cambridge, MA  
*Research Assistant, Advisor: Joshua Tenenbaum* Jun. 2018 - Sep. 2018

- Studied the problem of meta few-shot learning with minimal supervision while capable of generating samples from highly structural latent space.
- Achieved close to state-of-the-art classification performance on the Omniglot and Mini-ImageNet datasets.

**Johns Hopkins University, CIS** Baltimore, MD  
*Research Assistant, Advisor: Rene Vidal* May. 2017 - Dec. 2017

- Proposed a novel deep neural network: Deep MagNet that specifically solves cross-modality domain adaptation problems.
- Outperformed state-of-the-art approaches via extensive experiments, including transferring between Office-Caltech, Sketch-250, Caltech-250 and CAD rendered images.

## PUBLICATIONS

6. **Yunhan Zhao**, Haoyu Ma, Shu Kong, Charless Fowlkes. Instance Tracking in 3D Scenes from Egocentric Videos. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2024*
5. Qianqian Shen\*, **Yunhan Zhao\***, Nahyun Kwon, Jeeun Kim, Yanan Li, and Shu Kong. A high-resolution dataset for instance detection with multi-view instance capture. In *Thirty-seventh Conference on Neural Information Processing Systems, Datasets and Benchmarks Track, 2023*
4. **Yunhan Zhao**, Connelly Barnes, Yuqian Zhou, Eli Shechtman, Sohrab Amirghodsi, and Charless Fowlkes. Geofill: Reference-based image inpainting with better geometric understanding. In *The IEEE Winter Conference on Applications of Computer Vision, 2023*
3. **Yunhan Zhao**, Shu Kong, and Charless Fowlkes. Camera pose matters: Improving depth prediction by mitigating pose distribution bias. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, pages 15759–15768, 2021
2. **Yunhan Zhao**, Shu Kong, Daeyun Shin, and Charless Fowlkes. Domain decluttering: Simplifying images to mitigate synthetic-real domain shift and improve depth estimation. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, pages 3330–3340, 2020
1. **Yunhan Zhao**, Ye Tian, Charless Fowlkes, Wei Shen, and Alan Yuille. Resisting large data variations via introspective transformation network. In *The IEEE Winter Conference on Applications of Computer Vision*, pages 3080–3089, 2020

**TEACHING  
EXPERIENCE**

- **Teaching Assistant**, University of California, Irvine  
CS 216: Image Understanding Spring 2020
- **Teaching Assistant**, University of California, Irvine  
CS 116: Computational Photography and Vision Winter 2020
- **Teaching Assistant**, University of California, Irvine  
CS 178: Machine Learning and Data Mining Fall 2019

**INVITED  
TALKS**

1. Imperial College London Reading Group: Camera Pose Matters: Improving Depth Prediction by Mitigating Pose Distribution Bias; Irvine, CA (Remote); Jun. 2021

**PROFESSIONAL  
ACTIVITY**

Conference Reviewer:

- CVPR, ICCV, ECCV, WACV

Journal Reviewer:

- Neurocomputing, TPAMI