Albert Jianqiao Zhai

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Education

University of Illinois at Urbana-Champaign — *Fall 2021 – Present*
Ph.D. in Computer Science

California Institute of Technology — *Fall 2017 – Spring 2021*
B.S. in Computer Science with Minor in Information and Data Sciences

Research Experience

Research Assistant (Computer Vision) — *Summer 2022 – Present*
Shenlong Lab, UIUC
Advisor: Prof. Shenlong Wang

Research Intern (Robot Learning) — *Summer 2026 – Fall 2026*
XDOF Research
Advisor: Dr. Philipp Wu

Research Intern (Robot Learning/Vision) — *Summer 2024 – Fall 2024*
Perceptual Reasoning and Interaction Research, Allen Institute for AI
Advisors: Dr. Wei-Chiu Ma, Dr. Jiasen Lu, Dr. Kuo-Hao Zeng

Research Assistant (Computational Imaging) — *Fall 2021 – Spring 2022*
Computational Imaging Science Lab, UIUC
Advisor: Prof. Mark Anastasio

Research Intern (Robotics/Learning) — *Summer 2020 – Fall 2020*
Intelligent and Interactive Autonomous Systems Group, Stanford University
Advisor: Prof. Dorsa Sadigh

Research Intern (Deep Learning) — *Summer 2019 – Spring 2020*
Anandkumar Lab (Tensorlab), Caltech
Advisor: Prof. Animashree Anandkumar

Research Intern (Vision/Cognition) — *Spring 2018 – Spring 2019*
Shimojo Lab, Caltech
Advisor: Prof. Shinsuke Shimojo

Publications

- Z. Zhu, S. Liu, **A. J. Zhai**, H. Che, W. C. Ma, S. Wang, *MoRE: Mixture-of-Experts for Multi-Physics Robotic World Models*, CoRL (Spotlight), 2026 [project] [paper] [code]
- Q. Yu, W. Ding, G. X. Wang, **A. J. Zhai**, S. Wang, *Box Trajectories as Compact State Representations for World Action Models*, CoRL, 2026 [project] [paper] [code]
- **A. J. Zhai**, K. H. Zeng, J. Lu, A. Farhadi, S. Wang, W. C. Ma, *Imitating What Works: Simulation-Filtered Modular Policy Learning from Human Videos*, TMLR, 2026 [paper] [video]
- **A. J. Zhai**, X. Wang, K. Li, Z. Jiang, J. Zhou, S. Wang, Z. Jin, K. Guan, S. Wang, *CropCraft: Complete Structural Characterization of Crop Plants from Images*, 3DV (Oral), 2026 [project] [paper] [code]

- B. Chandaka, G. Wang, H. Chen, H. Che, **A. J. Zhai**, S. Wang, *Human-like Navigation in a World Built for Humans*, CoRL, 2025 [project] [paper] [code]
- T. Cheng, **A. J. Zhai**, E. Chen et al., *Demeter: A Parametric Model of Crop Plant Morphology from the Real World*, ICCV, 2025 [project] [paper] [code]
- D. Y. Yao, **A. J. Zhai**, S. Wang, *Uni4D: Unifying Vision Foundation Models for 4D Modeling from a Single Video*, CVPR (Highlight), 2025 [project] [paper] [code]
- H. Hsu, Z. Lin, **A. J. Zhai**, H. Xia, S. Wang, *AutoVFX: Physically Realistic Video Editing from Natural Language Instructions*, 3DV, 2025 [project] [paper] [code]
- **A. J. Zhai**, Y. Shen, E. Chen, G. Wang, X. Wang, S. Wang, K. Guan, S. Wang, *Physical Property Understanding from Language-Embedded Feature Fields*, CVPR, 2024 [project] [paper] [code]
- J. M. C. Marques, **A. J. Zhai**, S. Wang, K. Hauser, *On the Overconfidence Problem in Semantic 3D Mapping*, ICRA, 2024 [paper] [code]
- **A. J. Zhai**, S. Wang, *PEANUT: Predicting and Navigating to Unseen Targets*, ICCV, 2023 [project] [paper] [code]
- Y. Shen, B. Chandaka, Z. Lin, **A. J. Zhai**, H. Cui, D. A. Forsyth, S. Wang, *Sim-on-Wheels: Physical World in the Loop Simulation for Autonomous Driving*, RA-L, 2023 [project] [paper] [code]
- **A. J. Zhai**, J. Kuo, M. A. Anastasio, U. Villa, *Memory-Efficient Self-Supervised Learning of Null Space Projection Operators,* SPIE Medical Imaging, 2023 [paper]
- S. Karamcheti, **A. J. Zhai**, D. P. Losey, D. Sadigh, *Learning Visually Guided Latent Actions for Assistive Teleoperation,* L4DC, 2021 [paper] [code]
- H. Su, L. Wu, J. H. Jiang, R. Pai, A. Liu, **A. J. Zhai**, P. Tavallali, M. DeMaria, *Applying Satellite Observations of Tropical Cyclone Internal Structures to RI Forecast With Machine Learning*, Geophysical Research Letters, 2020 [paper]
- J. H. Jiang, **A. J. Zhai** et al., *Using Deep Space Climate Observatory Measurements to Study the Earth as An Exoplanet,* Astronomical Journal, 2018 [paper]
- X. Jiang, A. Kao, A. Corbett, E. Olsen, T. Pagano, **A. J. Zhai**, S. Newman, L. Li, Y. L. Yung, *Influence of Droughts on Mid-tropospheric CO2*, Remote Sensing, 2017 [paper]

Conference Presentations

- **A. J. Zhai**, X. Wang, K. Li, Z. Jiang, J. Zhou, S. Wang, Z. Jin, K. Guan, S. Wang, *CropCraft: Complete Structural Characterization of Crop Plants from Images*, International Conference on 3D Vision, Vancouver, Canada, 22 March 2026 [link]
- **A. J. Zhai**, Y. Shen, E. Chen, G. Wang, X. Wang, S. Wang, K. Guan, S. Wang, *NeRF2Physics: Physical Property Understanding from Language-Embedded Feature Fields*, CVPR Multimodalities for 3D Scenes Workshop, 2024 [link]
- **A. J. Zhai**, J. Kuo, M. A. Anastasio, U. Villa, *Memory-efficient self-supervised learning of null space projection operators*, SPIE Medical Imaging: Physics of Medical Imaging, San Diego, CA, 22 February 2023 [link]
- **A. J. Zhai**, S. M. Hung, S. Shimojo, *The role of color preference under interocular suppression*, Vision Sciences Society Annual Meeting, St. Pete Beach, FL, 21 May 2019 [link]
- J. H. Jiang, **A. J. Zhai** et al., *Using Deep Space Climate Observatory Measurements to Study the Earth as An Exoplanet*, AGU Fall Meeting, New Orleans, LA, 14 December 2017 [link]
- **A. J. Zhai**, J. H. Jiang, C. Frankenberg, Y. L. Yung, Y.S. Choi, *OCO-2 Solar-induced Fluorescence Data Portal and Applications to Crop Yield Estimation*, AGU Fall Meeting, San Francisco, CA, 16 December 2016 [link]

Teaching Experience

Teaching Assistant, UIUC

- **CS 498:** Machine Perception, **CS 444:** Deep Learning for Computer Vision, **CS 101:** Introduction to Computing: Engineering and Science

Teaching Assistant, Caltech

- **CS 157:** Statistical Inference, **CS 165:** Foundations of ML and Statistical Inference, **CS 155:** Machine Learning and Data Mining, **CS 038:** Algorithms, **CS 001:** Introduction to Computer Programming

Service

Reviewer/Program Committee Member

- CVPR, ICCV, ECCV, ICRA, NeurIPS, AAAI, WACV, 3DV, RA-L

Session Chair

- CSL Student Conference Robotics Session

Selected Awards

- 2026 CVPR Outstanding Reviewer Award
- 2025 Yunni and Maxine Pao Memorial Fellowship
- 2025 ICCV Outstanding Reviewer Award
- 2024 Qualcomm Innovation Fellowship Finalist
- 2024 CSL Student Conference Presentation Award
- 2019 Google Tech Challenge 1st Place Team
- 2018 Caltech Ph 11 Research Fellowship