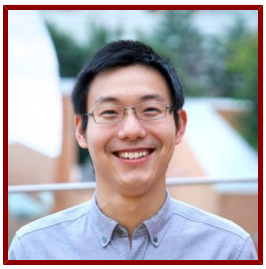
Stanford



Jiajun Wu

Assistant Professor of Computer Science and, by courtesy, of Psychology

CONTACT INFORMATION

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Bio

BIO

Jiajun Wu is an Assistant Professor of Computer Science and, by courtesy, of Psychology at Stanford University, working on computer vision, machine learning, and computational cognitive science. Before joining Stanford, he was a Visiting Faculty Researcher at Google Research. He received his PhD in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology. Wu's research has been recognized through the Young Investigator Programs (YIP) by ONR and by AFOSR, the NSF CAREER award, the Okawa research grant, the AI's 10 to Watch by IEEE Intelligent Systems, paper awards and finalists at ICCV, CVPR, SIGGRAPH Asia, ICRA, CoRL, and IROS, dissertation awards from ACM, AAAI, and MIT, the 2020 Samsung AI Researcher of the Year, and faculty research awards from J.P. Morgan, Samsung, Amazon, and Meta.

ACADEMIC APPOINTMENTS

- Assistant Professor, Computer Science
- Assistant Professor (By courtesy), Psychology
- Member, Bio-X
- Faculty Affiliate, Institute for Human-Centered Artificial Intelligence (HAI)
- Member, Wu Tsai Human Performance Alliance
- Member, Wu Tsai Neurosciences Institute

HONORS AND AWARDS

- Research Grant, Okawa Foundation (2024)
- CAREER Award, NSF (2024)
- Young Investigator Program (YIP), ONR (2024)
- AI's 10 to Watch, IEEE Intelligent Systems (2024)
- Best Paper Award, ICRA, IEEE (2024)
- Innovators Under 35 Asia Pacific, MIT Technology Review (2024)
- Young Investigator Program (YIP), AFOSR (2023)

- Best Paper Award, SIGGRAPH Asia, ACM (2023)
- Best Systems Paper Award, CoRL (2023)
- Best Paper Award Finalist, ICCV, IEEE/CVF (2023)
- Best Paper Award Candidate, CVPR, IEEE/CVF (2023)
- Global Research Outreach (GRO) Award, Samsung (2023)
- New Faculty Highlights, AAAI (2023)
- Best Paper Award Nominee, CoRL (2022)
- Faculty Research Award, J.P. Morgan (2022)
- 30 Under 30, Science, Forbes (2022)
- Early Career Professor Award Finalist, Agilent (2022)
- Research Award, Meta (2021)
- Research Award, Amazon (2021)
- AI Researcher of the Year, Samsung (2020)
- Global Research Outreach (GRO) Award, Samsung (2020)
- George M. Sprowls PhD Thesis Award in Artificial Intelligence and Decision-Making, MIT (2020)
- Doctoral Dissertation Award Honorable Mention, ACM (2019)
- Dissertation Award, AAAI/ACM SIGAI (2019)
- PhD Fellowship, Facebook (2017--2019)
- Best Paper Award on Cognitive Robotics, IROS, IEEE/RSJ (2018)
- PhD Fellowship, Samsung (2016--2017)
- Graduate Fellowship, Nvidia (2016--2017)
- Research Fellowship, Adobe (2015)
- Edwin S. Webster Fellowship, MIT (2014)

PROGRAM AFFILIATIONS

- Symbolic Systems Program

PROFESSIONAL EDUCATION

- Ph.D., MIT , EECS (2020)
- S.M., MIT , EECS (2016)

LINKS

- Personal Site: https://jiajunwu.com/
- Google Scholar: https://scholar.google.com/citations?user=2efgcS0AAAAJ&hl=en&oi=ao
- DBLP: https://dblp.dagstuhl.de/pid/117/4768.html

Teaching

COURSES

2024-25

- Minds and Machines: CS 24, LINGUIST 35, PHIL 99, PSYCH 35, SYMSYS 1, SYMSYS 200 (Win)

2023-24

- Computer Graphics in the Era of AI: CS 348I (Win)
- Minds and Machines: CS 24, LINGUIST 35, PHIL 99, PSYCH 35, SYMSYS 1, SYMSYS 200 (Win)

2022-23

- Minds and Machines: CS 24, LINGUIST 35, PHIL 99, PSYCH 35, SYMSYS 1, SYMSYS 200 (Aut)

2021-22

- Computer Graphics in the Era of AI: CS 348I (Aut)
- Deep Learning for Computer Vision: CS 231N (Spr)
- Triangulating Intelligence: Melding Neuroscience, Psychology, and AI: CS 322, PSYCH 225 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Zipeng Fu, Wanhee Lee, Sanjana Srivastava, Keenon Werling, Josiah Wong

Postdoctoral Faculty Sponsor

Weiyu Liu, Mengdi Xu

Master's Program Advisor

Aditya Bora, Tim Chen, Koren Gilbai, Emily Jin, Tarun Kumar Martheswaran, Ananjan Nandi, Nikil Ravi, Bhavna Sud, Jeremy Tian, Chuyi Zhang, Fangjun Zhou

Doctoral Dissertation Co-Advisor (AC)

Eric Chan, Cristobal Eyzaguirre, Michelle Guo, Kyle Hsu, Jiaman Li, Kyle Sargent, Fan-Yun Sun

Doctoral (Program)

Samuel Clarke, Chen Geng, Joy Hsu, Zizhang Li, Stephen Tian, Koven Yu, Yanjie Ze, Yunzhi Zhang

Publications

PUBLICATIONS

- **Physical scene understanding** *AI MAGAZINE*
  Wu, J.
  2024

- **Neurosymbolic Models for Computer Graphics** *COMPUTER GRAPHICS FORUM*
  Ritchie, D., Guerrero, P., Jones, R., Mitra, N. J., Schulz, A., Willis, K. D., Wu, J.
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- **REALIMPACT: A Dataset of Impact Sound Fields for Real Objects**
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- **Seeing a Rose in Five Thousand Ways**
  Zhang, Y., Wu, S., Snavely, N., Wu, J., IEEE
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- **OBJECTFOLDER 2.0: A Multisensory Object Dataset for Sim2Real Transfer**
  Gao, R., Si, Z., Chang, Y., Clarke, S., Bohg, J., Li Fei-Fei, Yuan, W., Wu, J., IEEE COMP SOC
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- **3D Shape Generation and Completion through Point-Voxel Diffusion**
  Zhou, L., Du, Y., Wu, J., IEEE

IEEE.2021: 5806-5815

- **Visual Dynamics: Stochastic Future Generation via Layered Cross Convolutional Networks** *IEEE TRANSACTIONS ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE*
  Xue, T., Wu, J., Bouman, K. L., Freeman, W. T.
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- **Learning a Probabilistic Latent Space of Object Shapes via 3D Generative-Adversarial Modeling**
  Wu, J., Zhang, C., Xue, T., Freeman, W. T., Tenenbaum, J. B., Lee, D. D., Sugiyama, M., Luxburg, U. V., Guyon, Garnett, R.
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- **Galileo: Perceiving Physical Object Properties by Integrating a Physics Engine with Deep Learning**
  Wu, J., Yildirim, I., Lim, J. J., Freeman, W. T., Tenenbaum, J. B., Cortes, C., Lawrence, N. D., Lee, D. D., Sugiyama, M., Garnett, R.
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- **3D Congealing: 3D-Aware Image Alignment in the Wild**
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- **Controllable Human-Object Interaction Synthesis**
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- **PhysDreamer: Physics-Based Interaction with 3D Objects via Video Generation**
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- **Reconstruction and Simulation of Elastic Objects with Spring-Mass 3D Gaussians**
  Zhong, L., Yu, H., Wu, J., Li, Y., Leonardis, A., Ricci, E., Roth, S., Russakovsky, O., Sattler, T., Varol, G.
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- **Ponymation: Learning Articulated 3D Animal Motions from Unlabeled Online Videos**
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- **MOTIVATING INFORMATION-SEEKING BEHAVIORS FOR NEW TECHNOLOGY ACROSS THE LIFE SPAN**
  Chu, L., Patterson, K., Kim, T., Srivastava, S., Zhang, R., Wu, J., Li, F., Carstensen, L.
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- **DAILY AND TECHNOLOGICAL CHALLENGES AND NEEDS IN OLDER AGES: A MIXED METHODS STUDY**
  Cruz, M., Chu, L., Gomezjurado Gonzalez, L., Zhang, R., Wu, J., Fei-Fei, L., Carstensen, L.
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- **An Eulerian Vortex Method on Flow Maps** *ACM TRANSACTIONS ON GRAPHICS*
  Wang, S., Deng, Y., Deng, M., Yu, H., Zhou, J., Chen, D., Komura, T., Wu, J., Zhu, B.
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- **Foundation models in robotics: Applications, challenges, and the future** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Firoozi, R., Tucker, J., Tian, S., Majumdar, A., Sun, J., Liu, W., Zhu, Y., Song, S., Kapoor, A., Hausman, K., Ichter, B., Driess, D., Wu, et al
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- **Partial-View Object View Synthesis via Filtering Inversion**
  Sun, F., Tremblay, J., Blukis, V., Lin, K., Xu, D., Ivanovic, B., Karkus, P., Birchfield, S., Fox, D., Zhang, R., Li, Y., Wu, J., Pavone, et al
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- **ULIP-2: Towards Scalable Multimodal Pre-training for 3D Understanding**
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- **Physically Grounded Vision-Language Models for Robotic Manipulation**

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  Ge, Y., Tang, Y., Xu, J., Gokmen, C., Li, C., Ai, W., Martinez, B., Aydin, A., Anvari, M., Chakravarthy, A. K., Yu, H., Wong, J., Srivastava, et al
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- **Efficient Imitation Learning with Conservative World Models**
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- **Learning to Design 3D Printable Adaptations on Everyday Objects for Robot Manipulation**
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- **Open X-Embodiment: Robotic Learning Datasets and RT-X Models**
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- **Naturally Supervised 3D Visual Grounding with Language-Regularized Concept Learners**
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- **HOLODECK: Language Guided Generation of 3D Embodied AI Environments**
  Yang, Y., Sun, F., Weihs, L., Vanderbilt, E., Herrasti, A., Han, W., Wu, J., Haber, N., Krishna, R., Liu, L., Callison-Burch, C., Yatskar, M., Kembhavi, et al
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- **Hearing Anything Anywhere**
  Wang, M., Sawata, R., Clark, S., Gao, R., Wu, S., Wu, J., IEEE
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- **Learning the 3D Fauna of the Web**
  Li, Z., Litvak, D., Li, R., Zhang, Y., Jakab, T., Rupprecht, C., Wu, S., Vedaldi, A., Wu, J., IEEE
  IEEE COMPUTER SOC.2024: 9752-9762

- **ZeroNVS: Zero-Shot 360-Degree View Synthesis from a Single Image**
  Sargent, K., Li, Z., Shah, T., Herrmann, C., Yu, H., Zhang, Y., Chan, E., Lagun, D., Li Fei-Fei, Sun, D., Wu, J., IEEE
  IEEE COMPUTER SOC.2024: 9420-9429

- **WonderJourney: Going from Anywhere to Everywhere**
  Yu, H., Duan, H., Hur, J., Sargent, K., Rubinstein, M., Freeman, W. T., Cole, F., Sun, D., Snavely, N., Wu, J., Herrmann, C., IEEE COMPUTER SOC
  IEEE COMPUTER SOC.2024: 6658-6667

- **DiffSound: Differentiable Modal Sound Rendering and Inverse Rendering for Diverse Inference Tasks**
  Jin, X., Xu, C., Gao, R., Wu, J., Wang, G., Li, S., Spencer, S.
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- **CityPulse: Fine-Grained Assessment of Urban Change with Street View Time Series**
  Huang, T., Wu, Z., Wu, J., Hwang, J., Rajagopal, R., Wooldridge, M., Dy, J., Natarajan, S.
  ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2024: 22123-22131

- **SkyScript: A Large and Semantically Diverse Vision-Language Dataset for Remote Sensing**
  Wang, Z., Prabha, R., Huang, T., Wu, J., Rajagopal, R., Dy, J., Natarajan, S., Wooldridge, M.
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- **RoboCraft: Learning to see, simulate, and shape elasto-plastic objects in 3D with graph networks** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Shi, H., Xu, H., Huang, Z., Li, Y., Wu, J.
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- **Object Motion Guided Human Motion Synthesis** *ACM TRANSACTIONS ON GRAPHICS*
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- **Fluid Simulation on Neural Flow Maps** *ACM TRANSACTIONS ON GRAPHICS*
  Deng, Y., Yu, H., Zhang, D., Wu, J., Zhu, B.
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- **Editing Motion Graphics Video via Motion Vectorization and Transformation** *ACM TRANSACTIONS ON GRAPHICS*
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- **Differentiable Physics Simulation of Dynamics-Augmented Neural Objects** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Le Cleac'h, S., Yu, H., Guo, M., Howell, T., Gao, R., Wu, J., Manchester, Z., Schwager, M.
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- **STAP: Sequencing Task-Agnostic Policies**
  Agia, C., Migimatsu, T., Wu, J., Bohg, J., IEEE
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- **Can Visual Scratchpads With Diagrammatic Abstractions Augment LLM Reasoning?**
  Hsu, J., Poesia, G., Wu, J., Goodman, N. D., Antoran, J., Blaas, A., Buchanan, K., Feng, F., Fortuin, Ghalebikesabi, S., Kriegler, A., Mason, Rohde, D., Ruiz, et al
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2023: 21-28
- **Compositional Diffusion-Based Continuous Constraint Solvers**
  Yang, Z., Mao, J., Du, Y., Wu, J., Tenenbaum, J. B., Lozano-Perez, T., Kaelbling, L., Tan, J., Toussaint, M., Darvish, K.
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- **Learning Sequential Acquisition Policies for Robot-Assisted Feeding**
  Sundaresan, P., Wu, J., Sadigh, D., Tan, J., Toussaint, M., Darvish, K.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2023
- **RoboCook: Long-Horizon Elasto-Plastic Object Manipulation with Diverse Tools**
  Shi, H., Xu, H., Clarke, S., Li, Y., Wu, J., Tan, J., Toussaint, M., Darvish, K.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2023
- **Composable Part-Based Manipulation**
  Liu, W., Mao, J., Hsu, J., Hermans, T., Garg, A., Wu, J., Tan, J., Toussaint, M., Darvish, K.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2023
- **Inferring Hybrid Neural Fluid Fields from Videos**
  Yu, H., Zheng, Y., Gao, Y., Deng, Y., Zhu, B., Wu, J., Oh, A., Neumann, T., Globerson, A., Saenko, K., Hardt, M., Levine, S.
  NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2023
- **Holistic Evaluation of Text-to-Image Models**
  Lee, T., Yasunaga, M., Meng, C., Mai, Y., Park, J., Gupta, A., Zhang, Y., Narayanan, D., Teufel, H., Bellagente, M., Kang, M., Park, T., Leskovec, et al
  NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2023
- **Learning to Design and Use Tools for Robotic Manipulation**
  Liu, Z., Tian, S., Guo, M., Liu, C., Wu, J., Tan, J., Toussaint, M., Darvish, K.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2023
- **VoxPoser: Composable 3D Value Maps for Robotic Manipulation with Language Models**
  Huang, W., Wang, C., Zhang, R., Li, Y., Wu, J., Fei-Fei, L., Tan, J., Toussaint, M., Darvish, K.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2023
- **NOIR: Neural Signal Operated Intelligent Robots for Everyday Activities**
  Zhang, R., Lee, S., Hwang, M., Hiranaka, A., Wang, C., Ai, W., Tan, J., Gupta, S., Hao, Y., Levine, G., Gao, R., Norcia, A., Li Fei-Fei, et al
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2023

- **Siamese Masked Autoencoders**
  Gupta, A., Wu, J., Deng, J., Li Fei-Fei, Oh, A., Neumann, T., Globerson, A., Saenko, K., Hardt, M., Levine, S.
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- **Benchmarking Rigid Body Contact Models**
  Guo, M., Jiang, Y., Spielberg, A., Wu, J., Liu, K., Pappas, G. J., Matni, N., Morari, M.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2023

- **Learning Rational Subgoals from Demonstrations and Instructions**
  Luo, Z., Mao, J., Wu, J., Lozano-Perez, T., Tenenbaum, J. B., Kaelbling, L., Williams, B., Chen, Y., Neville, J.
  ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2023: 12068-12078

- **Model-Based Control with Sparse Neural Dynamics**
  Liu, Z., Zhou, G., He, J., Marcucci, T., Li Fei-Fei, Wu, J., Li, Y., Oh, A., Neumann, T., Globerson, A., Saenko, K., Hardt, M., Levine, S.
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- **Stanford-ORB: A Real-World 3D Object Inverse Rendering Benchmark**
  Kuang, Z., Zhang, Y., Yu, H., Agarwala, S., Wu, S., Wu, J., Oh, A., Neumann, T., Globerson, A., Saenko, K., Hardt, M., Levine, S.
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- **SOUNDCAM: A Dataset for Finding Humans Using Room Acoustics**
  Wang, M., Clarke, S., Wang, J., Gao, R., Wu, J., Oh, A., Neumann, T., Globerson, A., Saenko, K., Hardt, M., Levine, S.
  NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2023

- **What's Left? Concept Grounding with Logic-Enhanced Foundation Models**
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  NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2023

- **Disentanglement via Latent Quantization**
  Hsu, K., Dorrell, W., Whittington, J. R., Wu, J., Finn, C., Oh, A., Neumann, T., Globerson, A., Saenko, K., Hardt, M., Levine, S.
  NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2023

- **3D Copy-Paste: Physically Plausible Object Insertion for Monocular 3D Detection**
  Ge, Y., Yu, H., Zhao, C., Guo, Y., Huang, X., Ren, L., Itti, L., Wu, J., Oh, A., Neumann, T., Globerson, A., Saenko, K., Hardt, et al
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- **Tree-Structured Shading Decomposition**
  Geng, C., Yu, H., Zhang, S., Agrawala, M., Wu, J., IEEE
  IEEE COMPUTER SOC.2023: 488-498

- **VQ3D: Learning a 3D-Aware Generative Model on ImageNet**
  Sargent, K., Koh, J., Zhang, H., Chang, H., Herrmann, C., Srinivasan, P., Wu, J., Sun, D., IEEE
  IEEE COMPUTER SOC.2023: 4217-4227

- **Rendering Humans from Object-Occluded Monocular Videos**
  Xiang, T., Sun, A., Wu, J., Adeli, E., Fei-Fei, L., IEEE
  IEEE COMPUTER SOC.2023: 3216-3227

- **Task-Driven Graph Attention for Hierarchical Relational Object Navigation**
  Lingelbach, M., Li, C., Hwang, M., Kurenkov, A., Lou, A., Martin-Martin, R., Zhang, R., Li Fei-Fei, Wu, J., IEEE
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- **SONICVERSE: A Multisensory Simulation Platform for Embodied Household Agents that See and Hear**
  Gao, R., Li, H., Dharan, G., Wang, Z., Li, C., Xia, F., Savarese, S., Fei-Fei, L., Wu, J., IEEE
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- **Primitive Skill-based Robot Learning from Human Evaluative Feedback**
  Hiranaka, A., Hwang, M., Lee, S., Wang, C., Fei-Fei, L., Wu, J., Zhang, R., IEEE
  IEEE.2023: 7817-7824

- **3D Neural Field Generation using Triplane Diffusion**
  Shue, J., Chan, E., Po, R., Ankner, Z., Wu, J., Wetzstein, G., IEEE
  IEEE COMPUTER SOC.2023: 20875-20886
- **CIRCLE: Capture In Rich Contextual Environments**
  Araujo, J., Li, J., Vetrivel, K., Agarwal, R., Wu, J., Gopinath, D., Clegg, A., Liu, C., IEEE
  IEEE COMPUTER SOC.2023: 21211-21221
- **Ego-Body Pose Estimation via Ego-Head Pose Estimation**
  Li, J., Liu, C., Wu, J., IEEE
  IEEE COMPUTER SOC.2023: 17142-17151
- **The OBJECTFOLDER BENCHMARK: Multisensory Learning with Neural and Real Objects**
  Gao, R., Dou, Y., Li, H., Agarwal, T., Bohg, J., Li, Y., Fei-Fei, L., Wu, J., IEEE
  IEEE COMPUTER SOC.2023: 17276-17286
- **PyPose: A Library for Robot Learning with Physics-based Optimization**
  Wang, C., Gao, D., Xu, K., Geng, J., Hu, Y., Qiu, Y., Li, B., Yang, F., Moon, B., Pandey, A., Aryan, Xu, J., Wu, T., et al
  IEEE COMPUTER SOC.2023: 22024-22034
- **Putting People in Their Place: Affordance-Aware Human Insertion into Scenes**
  Kulal, S., Brooks, T., Aiken, A., Wu, J., Yang, J., Lu, J., Efros, A. A., Singh, K., IEEE
  IEEE COMPUTER SOC.2023: 17089-17099
- **Accidental Light Probes**
  Yu, H., Agarwala, S., Herrmann, C., Szeliski, R., Snavely, N., Wu, J., Sun, D., IEEE
  IEEE COMPUTER SOC.2023: 12521-12530
- **Multi-Object Manipulation via Object-Centric Neural Scattering Functions**
  Tian, S., Cai, Y., Yu, H., Zakharov, S., Liu, K., Gaidon, A., Li, Y., Wu, J., IEEE
  IEEE COMPUTER SOC.2023: 9021-9031
- **NS3D: Neuro-Symbolic Grounding of 3D Objects and Relations**
  Hsu, J., Mao, J., Wu, J., IEEE
  IEEE COMPUTER SOC.2023: 2614-2623
- **ULIP: Learning a Unified Representation of Language, Images, and Point Clouds for 3D Understanding**
  Xue, L., Gao, M., Xing, C., Martin-Martin, R., Wu, J., Xiong, C., Xu, R., Niebles, J., Savarese, S., IEEE
  IEEE COMPUTER SOC.2023: 1179-1189
- **RoboCraft: Learning to See, Simulate, and Shape Elasto-Plastic Objects with Graph Networks**
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- **Scene Synthesis from Human Motion**
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- **Translating a Visual LEGO Manual to a Machine-Executable Plan**
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- **Video Extrapolation in Space and Time**
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