



Shuran Song

Assistant Professor of Electrical Engineering and, by courtesy, of Computer Science

Bio

BIO

Shuran Song is an Assistant Professor of Electrical Engineering at Stanford University. Before joining Stanford, she was faculty at Columbia University. Shuran received her Ph.D. in Computer Science at Princeton University, BEng. at HKUST. Her research interests lie at the intersection of computer vision and robotics. Song's research has been recognized through several awards, including the Best Paper Awards at RSS'22 and T-RO'20, Best System Paper Awards at CoRL'21, RSS'19, and finalists at RSS, ICRA, CVPR, and IROS. She is also a recipient of the NSF Career Award, Sloan Foundation fellowship as well as research awards from Microsoft, Toyota Research, Google, Amazon, and JP Morgan.

To learn more about Shuran's work, please visit: <https://shurans.github.io/>

ACADEMIC APPOINTMENTS

- Assistant Professor, Electrical Engineering
- Assistant Professor (By courtesy), Computer Science

HONORS AND AWARDS

- Research Scholar, Google (2023)
- Gabilan Faculty Fellow, Stanford (2023)
- Microsoft Faculty Fellowship, Microsoft (2021)
- Research Fellowship, Alfred P. Sloan Foundation (2022)
- Career Award, National Science Foundation (2022)

LINKS

- Academic website: <https://shurans.github.io/>
- Google Scholar: <https://scholar.google.com/citations?hl=en&user=5031vK4AAAAJ>
- Lab Site: <https://real.stanford.edu/>

Teaching

COURSES

2023-24

- Robot Perception: Hardware, Algorithm, and Application: CS 227A, EE 227 (Win)
- Sensorimotor Learning for Embodied Agents: EE 381 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Julia Di, Fadhil Ginting

Postdoctoral Faculty Sponsor

Yifan Hou

Doctoral (Program)

Zeyi Liu, Chuer Pan, Austin Patel, Mandi Zhao

Publications

PUBLICATIONS

- **AuRo special issue on large language models in robotics guest editorial** *AUTONOMOUS ROBOTS*
Xia, F., Ichter, B., Song, S., Hausman, K.
2023
- **TidyBot: personalized robot assistance with large language models** *AUTONOMOUS ROBOTS*
Wu, J., Antonova, R., Kan, A., Lepert, M., Zeng, A., Song, S., Bohg, J., Rusinkiewicz, S., Funkhouser, T.
2023
- **Iterative residual policy: For goal-conditioned dynamic manipulation of deformable objects** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
Chi, C., Burchfiel, B., Cousineau, E., Feng, S., Song, S.
2023
- **CoWs on PASTURE: Baselines and Benchmarks for Language-Driven Zero-Shot Object Navigation**
Gadre, S., Wortsman, M., Ilharco, G., Schmidt, L., Song, S., IEEE
IEEE COMPUTER SOC.2023: 23171-23181
- **Pick2Place: Task-aware 6DoF Grasp Estimation via Object-Centric Perspective Affordance**
He, Z., Chavan-Dafle, N., Huh, J., Song, S., Isler, V., IEEE
IEEE.2023: 7996-8002
- **TANDEM3D: Active Tactile Exploration for 3D Object Recognition**
Xu, J., Lin, H., Song, S., Ciocarlie, M., IEEE
IEEE.2023: 10401-10407
- **Built to Order: A Virtual Reality Interface for Assigning High-Level Assembly Goals to Remote Robots**
Wang, P., Jain, S., Li, M., Aoyama, S., Wang, X., Song, S., Liu, J., Feiner, S., Spencer, S. N.
ASSOC COMPUTING MACHINERY.2023
- **TANDEM: Learning Joint Exploration and Decision Making With Tactile Sensors** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Xu, J., Song, S., Ciocarlie, M.
2022; 7 (4): 10391-10398
- **Learning Pneumatic Non-Prehensile Manipulation With a Mobile Blower** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Wu, J., Sun, X., Zeng, A., Song, S., Rusinkiewicz, S., Funkhouser, T.
2022; 7 (3): 8471-8478
- **Universal Manipulation Policy Network for Articulated Objects** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Xu, Z., He, Z., Song, S.
2022; 7 (2): 2447-2454
- **Scene Editing as Teleoperation: A Case Study in 6DoF Kit Assembly**
Li, Y., Agrawal, S., Liu, J., Feiner, S. K., Song, S., IEEE
IEEE.2022: 4773-4780

- **DextAIRity: Deformable Manipulation Can be a Breeze**
Xu, Z., Chi, C., Burchfiel, B., Cousineau, E., Feng, S., Song, S., Hauser, K., Shell, D., Huang, S.
RSS FOUNDATION-ROBOTICS SCIENCE & SYSTEMS FOUNDATION.2022
- **Iterative Residual Policy for Goal-Conditioned Dynamic Manipulation of Deformable Objects**
Chi, C., Burchfiel, B., Cousineau, E., Feng, S., Song, S., Hauser, K., Shell, D., Huang, S.
RSS FOUNDATION-ROBOTICS SCIENCE & SYSTEMS FOUNDATION.2022
- **Continuous Scene Representations for Embodied AI**
Gadre, S., Ehsani, K., Song, S., Mottaghi, R., IEEE COMP SOC
IEEE COMPUTER SOC.2022: 14829-14839
- **Sim2Real in Robotics and Automation: Applications and Challenges** *IEEE TRANSACTIONS ON AUTOMATION SCIENCE AND ENGINEERING*
Hofer, S., Bekris, K., Handa, A., Gamboa, J., Mozifian, M., Golemo, F., Atkeson, C., Fox, D., Goldberg, K., Leonard, J., Karen Liu, C., Peters, J., Song, et al
2021; 18 (2): 398-400
- **Leveraging SE(3) Equivariance for Self-Supervised Category-Level Object Pose Estimation**
Li, X., Weng, Y., Yi, L., Guibas, L., Abbott, A., Song, S., Wang, H., Ranzato, M., Beygelzimer, A., Dauphin, Y., Liang, P. S., Vaughan, J. W.
NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2021
- **Dynamic Grasping with Reachability and Motion Awareness**
Akinola, I., Xu, J., Song, S., Allen, P. K., IEEE
IEEE.2021: 9422-9429
- **AdaGrasp: Learning an Adaptive Gripper-Aware Grasping Policy**
Xu, Z., Qi, B., Agrawal, S., Song, S., IEEE
IEEE.2021: 4620-4626
- **Spatial Intention Maps for Multi-Agent Mobile Manipulation**
Wu, J., Sun, X., Zeng, A., Song, S., Rusinkiewicz, S., Funkhouser, T., IEEE
IEEE.2021: 8749-8756
- **Visual Perspective Taking for Opponent Behavior Modeling**
Chen, B., Hu, Y., Kwiatkowski, R., Song, S., Lipson, H., IEEE
IEEE.2021: 13678-13685
- **SSCNav: Confidence-Aware Semantic Scene Completion for Visual Semantic Navigation**
Liang, Y., Chen, B., Song, S., IEEE
IEEE.2021: 13194-13200
- **Act the Part: Learning Interaction Strategies for Articulated Object Part Discovery**
Gadre, S., Ehsani, K., Song, S., IEEE
IEEE.2021: 15732-15741
- **GarmentNets: Category-Level Pose Estimation for Garments via Canonical Space Shape Completion**
Chi, C., Song, S., IEEE
IEEE.2021: 3304-3313
- **TossingBot: Learning to Throw Arbitrary Objects With Residual Physics** *IEEE TRANSACTIONS ON ROBOTICS*
Zeng, A., Song, S., Lee, J., Rodriguez, A., Funkhouser, T.
2020; 36 (4): 1307-1319
- **Grasping in the Wild: Learning 6DoF Closed-Loop Grasping From Low-Cost Demonstrations** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Song, S., Zeng, A., Lee, J., Funkhouser, T.
2020; 5 (3): 4978-4985
- **Category-Level Articulated Object Pose Estimation**
Li, X., Wang, H., Yi, L., Guibas, L., Abbott, A., Song, S., IEEE
IEEE.2020: 3703-12

- **ClearGrasp: 3D Shape Estimation of Transparent Objects for Manipulation**
Sajjan, S., Moore, M., Pan, M., Nagaraja, G., Lee, J., Zeng, A., Song, S., IEEE
IEEE.2020: 3634-3642
- **Learning to See before Learning to Act: Visual Pre-training for Manipulation**
Lin Yen-Chen, Zeng, A., Song, S., Isola, P., Lin, T., IEEE
IEEE.2020: 7286-7293
- **Spatial Action Maps for Mobile Manipulation**
Wu, J., Sun, X., Zeng, A., Song, S., Toussaint, M., Bicchi, A., Hermans, T.
MIT PRESS.2020
- **Form2Fit: Learning Shape Priors for Generalizable Assembly from Disassembly**
Zakka, K., Zeng, A., Lee, J., Song, S., IEEE
IEEE.2020: 9404-9410
- **Normalized Object Coordinate Space for Category-Level 6D Object Pose and Size Estimation**
Wang, H., Sridhar, S., Huang, J., Valentin, J., Song, S., Guibas, L. J., IEEE Comp Soc
IEEE COMPUTER SOC.2019: 2637-46
- **TossingBot: Learning to Throw Arbitrary Objects with Residual Physics**
Zeng, A., Song, S., Lee, J., Rodriguez, A., Funkouser, T., Bicchi, A., KressGazit, H., Hutchinson, S.
MIT PRESS.2019
- **DensePhysNet: Learning Dense Physical Object Representations via Multi-step Dynamic Interactions**
Xu, Z., Wu, J., Zeng, A., Tenenbaum, J. B., Song, S., Bicchi, A., KressGazit, H., Hutchinson, S.
MIT PRESS.2019
- **Im2Pano3D: Extrapolating 360 degrees Structure and Semantics Beyond the Field of View**
Song, S., Zeng, A., Chang, A. X., Savva, M., Savarese, S., Funkhouser, T., IEEE
IEEE.2018: 3847-56
- **Neural Graph Matching Networks for Fewshot 3D Action Recognition**
Guo, M., Chou, E., Huang, D., Song, S., Yeung, S., Li Fei-Fei, Ferrari, Hebert, M., Sminchisescu, C., Weiss, Y.
SPRINGER INTERNATIONAL PUBLISHING AG.2018: 673-689
- **Matterport3D: Learning from RGB-D Data in Indoor Environments**
Chang, A., Dai, A., Funkhouser, T., Halber, M., Niessner, M., Savva, M., Song, S., Zeng, A., Zhang, Y., IEEE
IEEE.2017: 667-76
- **3DMatch: Learning Local Geometric Descriptors from RGB-D Reconstructions**
Zeng, A., Song, S., Niessner, M., Fisher, M., Xiao, J., Funkhouser, T., IEEE
IEEE.2017: 199-208