

# GAOTIAN WANG

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## EDUCATION

SEP 2022 - PRESENT	<b>Rice University, Houston, TX</b> Ph.D. in COMPUTER SCIENCE Advisor: Dr. Kaiyu Hang
SEP 2018 - JUN 2022	<b>University of Science and Technology of China, Hefei, China</b> B.S. in OPTICAL ENGINEERING and COMPUTER SCIENCE Advisor: Dr. Nikolaos M. Freris

## RESEARCH INTERESTS

- ◇ Robot Manipulation, Manipulation under Uncertainties, Compliant Mechanisms
- ◇ Machine Learning, Deep Learning, Reinforcement Learning, Large Language Models Applications
- ◇ Optimal Control, Motion Planning

## RESEARCH EXPERIENCE

SEP 2022 - PRESENT	<b>RobotII Lab</b> at Rice University, Houston, TX Graduate Student, Advisor: Dr. Kaiyu Hang ◇ <i>UNO Push: Unified Nonprehensile Object Pushing via Non-Parametric Estimation and Model Predictive Control</i> ◇ <i>Exploring Robust Robot Manipulation through Compliance-Based and Motion-based Manipulation Funnels</i>
NOV 2021 - JUN 2022	<b>AloT Lab</b> at USTC, Hefei, China Undergraduate Researcher, Advisor: Dr. Nikolaos M. Freris ◇ <i>Modeling and Control of Soft Arm via Piecewise Universal Joint Model</i>
APR 2021 - SEP 2021	<b>Reconfigurable Robotics Lab</b> at EPFL, Lausanne, Switzerland Guest Researcher, Supervisor: Dr. Fabio Zuliani and Dr. Jamie Paik ◇ <i>Origami Structures Stiffness Modeling</i>
AUG 2020 - OCT 2021	<b>USTC Soft Robotics Lab</b> at USTC, Hefei, China Undergraduate Researcher, Dr. Hao Jiang and Dr. Xiaoping Chen ◇ <i>Sim to Real Transfer of the Soft Robotics Arm via Q-learning Controller that uses pre-trained models from a rough simulator</i>

## SKILLS

Programming Capabilities:	ROS, C, C++, Matlab, Python, Arduino
Simulation Environments:	PyBullet, Isaac gym, MuJoCo, Taichi
Deep Learning Frameworks:	PyTorch, Tensorflow
Others:	3D modeling and printing, solidworks soldering, Mathematica, COMSOL Multiphysics, OMPL, RViz

## PROFESSIONAL SERVICE

- Referee:** ◇ IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2023  
◇ IEEE International Conference on Robotics and Automation (ICRA), 2024

## PUBLICATIONS

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### Preprints under review

P1. Gaotian Wang<sup>†</sup>, Kejia Ren<sup>†</sup>, Andrew S. Morgan, and Kaiyu Hang. Title withheld for double-blind review. In *Robotics: Science and Systems*, 2024. <sup>†</sup> Equal Contribution. Under Review

### Peer-Reviewed Journal Papers

J1. Yinghao Gan, Peijin Li, Hao Jiang, **Gaotian Wang**, Yusong Jin, Xiaoping Chen, and Jianmin Ji. 2022. “A Reinforcement Learning Method for Motion Control With Constraints on an HPN Arm.” *IEEE Robotics and Automation Letters* 7 (4): 12006–13. <https://doi.org/10.1109/LRA.2022.3196789>.

### Peer-Reviewed Conference Papers

C4. Howard Qian, Yangxiao Lu, Kejia Ren, **Gaotian Wang**, Ninad Khargonkar, Yu Xiang, and Kaiyu Hang. 2024 “RISeg: Robot Interactive Object Segmentation via Body Frame-Invariant Features.” In *2024 IEEE International Conference on Robotics and Automation (ICRA)* (To appear)

C3. Zhanchi Wang, **Gaotian Wang**, Xiaoping Chen, and Nikolaos M Freris. 2024 “Kinematic Modeling and Control of a Soft Robotic Arm with Non-constant Curvature Deformation.” In *2024 IEEE International Conference on Robotics and Automation (ICRA)* (To appear)

C2. Zhanchi Wang, **Gaotian Wang**, Xiaoping Chen, and Nikolaos M. Freris. 2023. “Dynamic Modeling and Control of a Soft Robotic Arm Using a Piecewise Universal Joint Model.” In *2023 IEEE International Conference on Robotics and Biomimetics (ROBIO)*, 1–6. Koh Samui, Thailand: IEEE. <https://doi.org/10.1109/ROBIO58561.2023.10354732>.

C1. Peijin Li, **Gaotian Wang**, Hao Jiang, Yusong Jin, Yinghao Gan, Xiaoping Chen, and Jianmin Ji. 2021. “A Q-Learning Control Method for a Soft Robotic Arm Utilizing Training Data from a Rough Simulator.” In *2021 IEEE International Conference on Robotics and Biomimetics (ROBIO)*, 839–45. Sanya, China: IEEE. <https://doi.org/10.1109/ROBIO54168.2021.9739524>.

### Theses

T1. **Gaotian Wang**. A Randomized Kinodynamic Planner for Soft Robots based on Piecewise Universal Joint Model. Bachelor’s thesis, USTC, Hefei, China, 2022

## SCHOLARSHIPS AND CERTIFICATES

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2022 Mengzhilan (Dream Of Blue), China Aerospace Foundation Scholarship  
2020 Outstanding Student Scholarship of USTC, *Gold* (Top 3%)  
2019 Endeavor Student Scholarship  
2018 Yan Jici Talent Program Scholarship (Top 10%)

## TEACHING

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FALL 2023	Teaching Assistant for <b>Algorithmic Robotics COMP/ELEC/MECH 450/550</b> <i>at Rice University</i>
SPRING 2023	Teaching Assistant for <b>Deep Learning for Vision &amp; Language COMP 646</b> <i>at Rice University</i>
FALL 2020-2022	In-lab Teaching Assistant for <b>College Physics-Comprehensive Experimentation</b> <i>at University of Science and Technology of China</i>