TIAN-AO (TEO) REN

E-mail: tianao@stanford.edu ◇ Tel: +1 650-661-9980 ◇ Homepage ◇ Google Scholar

EDUCATION

Ph.D. Student in Mechanical Engineering — Jan 2025 - **Present**
Stanford University — *California, U.S.*

- Advisor: Prof. Mark Cutkosky, PI of Biomimetics and Dextrous Manipulation Lab(BDML)

M.S. in Mechanical Engineering — Sep 2023 - Jun 2025
Stanford University — *California, U.S.*

- GPA: **4.0**/4.0
- Depth in **Design Methodology**

B.Eng. in Robotics Engineering — Sep 2019 - Jun 2023
Beijing University of Chemical Technology — *Beijing, China*

- Overall GPA: **90.8**/100, Major GPA: **94.6**/100
- **Outstanding Graduates in Beijing**

PUBLICATION

Journal Articles

- J. Lai*, **T.-A. Ren***, P. Ye, J. Sun, H. Ren, "**Gravity-Aware Proactive Joint-Level Compensation for Portable Soft Slender Robots Using a Single IMU and Real-Time Simulation**", 2025. *Accepted by International Journal of Robotics Research (**IJRR**).*
- E. Rennich, **T.-A. Ren**, J. Kim, J. Di, T. Chen, M. Cutkosky, "**Gentle Grasping with Gecko-Inspired Adhesives in Extreme Environments**", 2025. *IEEE Transactions on Field Robotics (**T-FR**).* [DOI]
- J. Lai, Y. Liu, **T.-A. Ren**, Y. Ma, T. Zhang, J. Y. Teoh, M. Cutkosky, H. Ren, "**Single twistable tendon-driven continuum robots**", 2025. *Under review by Nature Communications.*
- J. Lai*, **T.-A. Ren***, W. Yue, S. Su, J. Y. K. Chan, and H. Ren, "**Sim-to-Real Transfer of Soft Robotic Navigation Strategies That Learns from the Virtual Eye-in-Hand Vision**", 2023. *IEEE Transactions on Industrial Informatics (**T-II**).* [DOI] [Supply Video]
- Wang G, **T.-A. Ren**, J. Lai, L. Bai, H. Ren, "**Domain Adaptive Sim-to-Real Segmentation of Oropharyngeal Organs**", 2023. *Medical & Biological Engineering & Computing (**MBEC**).* [DOI]

Conference Papers

- C. Ng, H. Gao, **T.-A. Ren**, J. Lai, H. Ren , "Contact-Aided Navigation of Flexible Robotic Endoscope Using Deep Reinforcement Learning in Dynamic Stomach", *The 2025 IEEE International Conference on Robotics and Biomimetics (**ROBIO 2025**)***[Best Paper Award]***
- C. Xing, H. Li, Y. Wei, **T.-A. Ren**, T. Tu, Y. Lin, E. Schumann, W. Zheng, M. Cutkosky, "TacCap: A Wearable FBG-Based Tactile Sensor for Seamless Human-to-Robot Skill Transfer", *The 2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS 2025**)* [DOI]
- **T.-A. Ren**, W. Liu, T. Zhang, H. Ren, J. Lai,"Three-dimensional Morphological Reconstruction of Millimeter-Scale Soft Continuum Robots based on Dual Stereo Vision", *The 2024 IEEE International Conference on Robotics and Biomimetics (**ROBIO 2024**)* [DOI]***[Oral]***
- C. Ng, H. Gao, **T.-A. Ren**, J. Lai, H. Ren, "Navigation of Tendon-Driven Flexible Robotic Endoscope through Deep Reinforcement Learning", 2024. *IEEE International Conference on Advanced Robotics and Its Social Impacts (**ARSO 2025**)* [DOI]

Posters & Demonstrations

- **T.-A. Ren**, M. Cutkosky. "Stickybot IV", Stanford Robotics Center Launch Symposium. [Demo URL]
- **T.-A. Ren**, Z. Yu, B. Vuong, A. Meola, and A. Okamura, "Concentric Agonist-antagonist Robots for Neurosurgical Applications", *IEEE **RoboSoft** 2024 Workshop.*[URL] [PDF] **[Best submission for lighting talk]**
- Wang G, **T.-A. Ren**, J. Lai, L. Bai, H. Ren, "Sim-to-Real Segmentation in Robot-assisted Transoral Tracheal Intubation", *IEEE **ICRA 2023** Workshop* [DOI] **[Best Poster Award]**

*denotes co-first authorship

SERVICES

- **Reviewer of IROS'2024 / ICRA'24/25/26 / IEEE Transactions on Medical Robotics and Bionics / IEEE Transactions on Industrial Informatics**

TEACHING EXPERIENCES

- **TA for ME 327: Design and Control of Haptic Systems** (PI: Prof. Allison Okamura) Spring 2025

SKILLS

- **Programming**: Proficient in **C/C++, Python, Assembly Language**
- **Software/Platforms**: **ROS 1/2, Matlab/Simulink, SOFA Framework**, ABAQUS, COMSOL, Multisim, CAD, Gmsh, LaTeX, Git, etc.
- **Hardware**: Jetson Nano Developer Kit, STM32, Arduino, NUC, etc.
- **Languages**: Mandarin (Native), English (Proficient)