Ruohan Wang

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State Key Laboratory of Fluid Power and Mechatronic Systems
School of Mechanical Engineering, Zhejiang University (ZJU), Hangzhou, China

EDUCATION

- Sep. 2021−Now:
  Ph.D. in Mechatronic Engineering, School of Mechanical Engineering, Zhejiang University (ZJU), Hangzhou, China
- Sep. 2017− Jun. 2021:
- B. Eng. in Mechanical Engineering, School of Mechanical, Electronic and Control Engineering, Beijing Jiaotong University, Beijing, China.
  Academic Achievement: average score 90.2(100), GPA 3.87(4), rank 2/63
- Computer Skills: Python, C++, MATLAB, ROS 1, ROS 2, FCI (Franka Emika), RobotStudio, OpenCV

RESEARCH INTERESTS

- Human-motion based Robot Teleoperation and Shared Control
- Wearable Exoskeleton for Teleoperation and Force Feedback
- Human-Robot Safe Interaction
- Artificial Intelligence and its Applications in Robotics

PUBLICATION LIST

- Journal Papers:
  [1] **Ruohan Wang**, Chen Li, Honghao Lv, Gaoyang Pang, Haiteng Wu and Geng Yang, "A Smooth Velocity Transition Framework Based on Hierarchical Proximity Sensing for Safe Human-Robot Interaction," *IEEE Robotics and Automation Letters*, vol. 9, no. 6, pp. 4910-4917, 2024.
  [2] **Ruohan Wang**†, Honghao Lv†, Zhangli Lu, Xiaoyan Huang, Haiteng Wu, Junjie Xiong, Geng Yang*, "A medical assistive robot for tele-healthcare during the COVID-19 pandemic: development and usability study in an isolation ward" *JMIR Human Factors*, vol. 10, art. no. 2023.
  [3] Yuyao Lu†, Depeng Kong†, Geng Yang*, **Ruohan Wang**, Gaoyang Pang, Huayu Luo, Huayong Yang, Kaichen Xu1*, "Machine Learning-Enabled Tactile Sensor Design for Dynamic Touch Decoding", *Advanced Science*, 2023: 2303949. **(build the verification platform)**
  [4] Huiying Zhou, Honghao Lv, **Ruohan Wang**, Haiteng Wu, Geng Yang*, "Revitalizing Human-Robot Interaction: Phygital Twin Driven Robot Avatar for China–Sweden Teleoperation" *Chinese Journal of Mechanical Engineering (CJME)*, 36, 124 (2023). **(build the teleoperation algorithm)**
  [5] Huiying Zhou, Geng Yang, Baicun Wang*, Lingyu Li, **Ruohan Wang**, Xiaoyan Huang, Haiteng Wu, and Xi Vincent Wang, "An attention-based deep learning approach for inertial motion recognition and estimation in human-robot collaboration," *Journal of Manufacturing Systems*, Volume 67, Pages 97-110, 2023. **(build the verification platform)**
  [6] Kaichen Xu, Qi'ao Li, Yuyao Lu, Huayu Luo, Yihui Jian, Dingwei Li, Depeng Kong, **Ruohan Wang**, Jibing Tan, Zimo Cai, Geng Yang, Bowen Zhu, Qingqing Ye, Huayong Yang, and Tiefeng Li, Laser Direct Writing of Flexible Thermal Flow Sensors, *Nano Letters*, pp 10317-10325,2023. **(build the verification platform)**
  [7] Geng Yang, Zhiqiu Ye, Haiteng Wu, Chen Li, **Ruohan Wang**, Depeng Kong, Zeyang Hou, Huafen Wang, Xiaoyan Huang, Zhibo Pang, and Gaoyang Pang*, A Digital Twin Based Large-Area Robot Skin System for Safer Human-Centered Healthcare Robots Toward Healthcare 4.0. TMRB **(Finial revisions, Robot experiment)**
- Conference Papers (peer-reviewed):
  [1] **Ruohan Wang**, Xi Cui, Honghao Lv, Guangyao Zhang, Haiteng Wu, and Geng Yang*, "Enable Intuitive and Immersive Teleoperation: Design, Modeling and Control of a Novel Wearable Exoskeleton," in the 16th International Conference on Intelligent Robotics and Applications (ICIRA 2023), Part I, Lecture Notes in Computer Science, vol 14268.

[2] **Ruohan Wang**, et al. "Towards Immersive Teleoperation: Dynamic Identification for Force Feedback of a Wearable Exoskeleton". (**Recently accepted in ASIAN MMS 2024**)

[3] Honghao Lv, Huiying Zhou, **Ruohan Wang**, Haiteng Wu, Zhibo Pang and Geng Yang*, "Towards Intercontinental Teleoperation: A Cloud-Based Framework for Ultra-Remote Human-Robot Dual-Arm Motion Mapping", in the 16th International Conference on Intelligent Robotics and Applications (ICIRA2023), Hangzhou, China, Jul. 2023. (**Best Student Paper Finalist Award**)

[4] Longqiang Wang, **Ruohan Wang**, Haiteng Wu, and Geng Yang*, "Keeping Workers Safe in Electric Working: A Robot System for High-Voltage Live Operation," in the 2023 IEEE International Conference on Industrial Technology (ICIT), Orlando, FL, USA, 2023, pp. 1-5. **(build the teleoperation system)**

- Patents:

[1] Geng Yang, **Ruohan Wang**, Nan Zhang, **Honghao Lv**, Haiteng Wu, Huayong Yang， Zhejiang University; Dual Arm Collaborative Robot based on Six DoFs Manipulator: CN115366071A (Invention disclosure, substantive examination) **(1st author is my supervisor)**

[2] Geng Yang, Honghao Lv, **Ruohan Wang**, Huayong Yang， Zhejiang University; A Movable Multi-DoFs Dual Arm Collaborative Robot: CN115958578A (Invention disclosure, substantive examination)

[3] Geng Yang, Honghao Lv, **Ruohan Wang**, Huayong Yang, Zhejiang University; A Human Motion Capture and Guidance Data Generation Software for Dual-arm robot teleoperation: Registration No.2022SR0816120.

RESEARCH PROJECTS

- Preparatory Research Supported by a Research Project * May 2022 – Now:
  Project Leader *Towards immersive teleoperation: the development of a wearable exoskeleton featuring force feedback. Robot self-collision avoidance.*
- Preparatory Research Supported by a Research Project * Apr. 2022 – Sep. 2023:
  Project Leader *Robot digital twin development, robot arm teleoperation and robot manipulator compliance control for high voltage live operation.*
- Preparatory Research Supported by a Research Project * Jun. 2022 – Sep, 2023:
  Project Leader Research on robot path planning technology based on force feedback and position control.
- Robotics Institute of Zhejiang University Sep. 2021 – Mar. 2022:
  Project Leader *Design of human computer safety interaction strategy based on* **Kinova Gen2** *manipulator and flexible skin.*
- Robotics Institute of Zhejiang University Sep. 2021 – Dec. 2021:
  Collaborate with PhD Students *Transcontinental ultra long-distance Teleoperation Based on Google cloud platform and OpenVPN.*

AWARDS & SCHOLARSHIPS

- Scholarship for Outstanding Graduate Jun. 2023
- Scholarship for Outstanding Graduate Jun. 2022
- 1st Prize in China graduate electronic design competition Aug. 2023
- 1st Prize in the fourth graduate robot competition Aug. 2022
- 2nd Prize in Micro nano sensing technology and application competition Aug. 2022
- Gold Prize, the national mechanical industry design innovation competition Nov. 2021
- Jianchen scholarship of Zhejiang University Jun. 2022
- Huaneng safety Scholarship of Zhejiang University Jun. 2021
- National Scholarship (for Undergraduate Student) Nov. 2020

REFEREES

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