JIANG Zixing

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EDUCATION

M.Phil. Surgery, The Chinese University of Hong Kong (CUHK), China, In progress 2024–

B.Eng. Electronic Information Engineering, *First-Class Honors*, CUHK-Shenzhen, China, 2023

EXPERIENCE

2023–24 CUHK Department of Surgery — *Hong Kong, China*
Research Assistant, Advanced Bio-Medical Robotics Lab — *2023.11–2024.07*

2020–23 CUHK-Shenzhen Robotics & AI Lab (RAIL) — *Shenzhen, China*
Student Research Intern, SUN Lab (surgical robots and medical devices) — *2023.02–2023.08*
Student Research Intern, Advanced Marine Robotics Group — *2020.09–2023.02*

RESEARCH INTERESTS

Robotics / Medical Robotics / Surgical Robotics

Image-Guided Robotic Interventions

Robot-Assisted Imaging

SELECTED PROJECTS

2023–24 Autonomous Robotic Lung Ultrasound — *Research project I participated in at CUHK, supervised by Prof. LI Zheng and Prof. Pheng-Ann Heng. This project aimed to use robots to perform autonomous point-of-care lung ultrasound examinations in intensive care units (ICUs) to reduce the risk of infection for clinicians during epidemics. I contributed to this project as the robot development lead, prototyped a robotic lung ultrasound system and assisted in its preclinical validation. A video demonstration of the prototype in action is available on my homepage.*[1]

2020–23 Manipulator-Assisted UAV Landing on Wave-Disturbed Aquatic Platform — *Research project I participated in at CUHK-Shenzhen, supervised by Prof. QIAN Huihuan. This project aimed to use a manipulator to help a unmanned aerial vehicle (UAV) to land on a wave-disturbed aquatic platform. I contributed to this project by assisting Ph.D. students in developing and validating the manipulator's end-effector and motion planning algorithm. For more information, please visit my homepage.*[2]

PUBLICATIONS[3]

Journal Article

2024 R. Xu, **Z. Jiang**, B. Liu, Y. Wang, and H. Qian†, "Confidence-Aware Object Capture for a Manipulator Subject to Floating-Base Disturbances," in *IEEE Transactions on Robotics (T-RO)*, vol. 40, pp. 4396-4413, 2024, doi: 10.1109/TRO.2024.3463476.

[1] https://zixingjiang.com/projects/robotic-lus/
[2] https://zixingjiang.com/projects/floating-manipulator/ (manipulator's motion planning algorithm), and https://zixingjiang.com/projects/tethered-landing/ (manipulator's end-effector)
[3] Notations: * co-first authors, † corresponding authors

Conference Proceedings

2023 Y. Jiang, R. Xu, **Z. Jiang** and H. Qian†, "Design, Modeling and Control of A Novel USV-Manipulator System," *2023 IEEE International Conference on Real-time Computing and Robotics (RCAR)*, Datong, China, 2023, pp. 206-211, doi: 10.1109/RCAR58764.2023.10249802.

2022 C. Liu, **Z. Jiang**, R. Xu, X. Ji, L. Zhang and H. Qian†, "Design and Optimization of a Magnetic Catcher for UAV Landing on Disturbed Aquatic Surface Platforms," *2022 International Conference on Robotics and Automation (ICRA)*, Philadelphia, PA, USA, 2022, pp. 1162-1168, doi: 10.1109/ICRA46639.2022.9812270.

Patents

2023 **Z. Jiang**, X. Ji, C. Liu, and H. Qian, "Four-wing flapping wing micro water surface aircraft and flight method," Chinese patent CN114889821B, granted February 24, 2023.

2022 X. Ji, Z. Song, **Z. Jiang**, and H. Qian, "Flapping wing mechanism and miniature water surface flapping wing aircraft," Chinese patent CN217320745U, granted August 30, 2022.

2022 X. Ji, Z. Song, **Z. Jiang**, and H. Qian, "Flapping wing mechanism based on double cranks and micro water surface flapping wing aircraft," Chinese patent CN217320744U, granted August 30, 2022.

2022 C. Liu, Z. Cao, **Z. Jiang**, R. Xu, X. Ji, and H. Qian, "Landing system, landing method and storage medium for unmanned aerial vehicle," Chinese patent CN115167522A, published October 11, 2022, patent pending.

CONFERENCE ACTIVITY

Workshop Presentation[3]

2024 **Z. Jiang**, Y. Hu, X. Luo, J. Miao, Y. Zhang, L. Lei, S. Wang, P.-A. Heng, and Z. Li†, "A Collaborative Robotic System with In-Plane Orientation Adjustment for Lung Ultrasonograph", presented at workshop *Autonomy in Robotic Surgery: State of the art, technical and regulatory challenges for clinical application*, 2024 IEEE International Conference on Robotics and Automation (ICRA), Yokohama, Japan, May 13, 2024. — *Abstract, poster, and videos are available on my homepage.*[4]

ACADEMIC SERVICE

Peer Review

The IEEE International Conference on Robotics and Automation (ICRA), 2025

The IEEE International Conference on Robotics and Biomimetics (ROBIO), 2023

LEADERSHIP

2020–22 President of RAIL Student Robotics Association, CUHK-Shenzhen — *Responsibilities: recruiting members, coordinating events, and providing weekly robotics tutorials.*

AWARDS

2023 School of Science and Engineering Academic Year 2022–23 Dean's List Award, CUHK-Shenzhen

2021–22 The 17th–19th rounds of Undergraduate Research Award, CUHK-Shenzhen

[4] https://zixingjiang.com/icra2024/

TECHNICAL SKILLS

Coding	Python, C++, C, MATLAB
Robotics	Full-stack development experience with a particular focus on motion planning and control
Img Proc	Spatial-temporal filtering, segmentation, registration
Software	Robotics development: ROS, MoveIt, Gazebo, CoppeliaSim Computing / Data analysis / Machine Learning: Eigen, NumPy, pandas, PyTorch, scikit-learn 2D & 3D vision: OpenCV, Open3D, 3D Slicer CAD: SolidWorks Miscellaneous: Docker, DaVinci Resolve, LaTeX
Hardware	Developing platforms: Linux, Arduino, Raspberry Pi, STM32, ESP32, FPGA Robots: manipulator, ornithopter, UAV, USV, UGV Sensors: RGB-D camera, force/torque sensor, optical tracker Interfaces: haptic devices, joysticks Medical imaging equipment: clinical ultrasound

LANGUAGES

Chinese	Mandarin – Native
English	Professional proficiency

REFERENCES

Prof. LI Zheng zhengli@cuhk.edu.hk
Associate Professor
Department of Surgery
The Chinese University of Hong Kong
Relationship: Research & M.Phil. supervisor

Prof. QIAN Huihuan (Alex) hhqian@cuhk.edu.cn
Associate Professor
School of Science and Engineering
The Chinese University of Hong Kong, Shenzhen
Relationship: Research & B.Eng. final year project supervisor