

# 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 Research Assistant, Advanced Bio-Medical Robotics Lab	Hong Kong, China 2023.11–2024.07
2020–23	CUHK-Shenzhen Robotics & AI Lab (RAIL) Student Research Intern, SUN Lab (surgical robots and medical devices) Student Research Intern, Advanced Marine Robotics Group	Shenzhen, China 2023.02–2023.08 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 under the supervision of Prof. LI Zheng and Prof. Pheng-Ann Heng. This project aimed to use robots to perform autonomous point-of-care lung ultrasound examinations in 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 demo of the prototype is available on [my homepage](#).<sup>1</sup>*

2020–23 Manipulator-Assisted UAV Landing on Wave-Disturbed Aquatic Platform  
*Research project I participated in at CUHK-Shenzhen under the supervision of 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](#).<sup>2</sup>*

## PUBLICATIONS<sup>3</sup>

### Journal Article

2024 R. Xu, **Z. Jiang**, B. Liu, Y. Wang, and H. Qian<sup>†</sup>, “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](https://doi.org/10.1109/TRO.2024.3463476).

<sup>1</sup><https://zixingjiang.com/projects/robotic-lus/>

<sup>2</sup><https://zixingjiang.com/projects/floating-manipulator/> (manipulator's motion planning algorithm), and <https://zixingjiang.com/projects/tethered-landing/> (manipulator's end-effector)

<sup>3</sup>Notations: \* co-first authors, † corresponding authors

## Conference Proceedings

- 2023 Y. Jiang, R. Xu, **Z. Jiang** and H. Qian<sup>†</sup>, “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](https://doi.org/10.1109/RCAR58764.2023.10249802).
- 2022 C. Liu, **Z. Jiang**, R. Xu, X. Ji, L. Zhang and H. Qian<sup>†</sup>, “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](https://doi.org/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<sup>3</sup>

- 2024 **Z. Jiang**, Y. Hu, X. Luo, J. Miao, Y. Zhang, L. Lei, S. Wang, P.-A. Heng, and Z. Li<sup>†</sup>, “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](#)*.<sup>4</sup>

## 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

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<sup>4</sup><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, L<sup>A</sup>T<sub>E</sub>X

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](mailto: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](mailto: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

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