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

Final Year Project: Control of the Multi-Joint Manipulator for Grasping on Water Surface, supervised by Prof. QIAN Huihuan.

EXPERIENCE

2023–24 Department of Surgery, CUHK — Hong Kong, China
Research Assistant, Advanced Bio-Medical Robotics Lab — *Nov. 2023 – Jul. 2024*

2020–23 Robotics & AI Lab (RAIL), CUHK-Shenzhen — Shenzhen, China
Research Intern, SUN Lab (surgical robots and medical devices) — *Feb. 2023 – Aug. 2023*
Research Intern, Advanced Marine Robotics Group — *Sept. 2020 – Feb. 2023*

RESEARCH INTERESTS

Robotics / Medical Robotics / Surgical Robotics

Image-Guided Robotic Interventions

Robot-Assisted Imaging

SELECTED PROJECTS

2024– Robotic Ultrasound-Guided Prostate Biopsy

Ongoing research project at CUHK, supervised by Prof. LI Zheng and Prof. CHIU Ka Feng Peter.

My Contributions: Developing an ultrasound image-guided needle navigation program for a prostate biopsy robot and assisting in related clinical tests.

2023–24 Autonomous Robotic Lung Ultrasound

Research project at CUHK, supervised by Prof. LI Zheng and Prof. HENG Pheng Ann.

My Contributions: Developed a robot prototype for autonomous lung ultrasound and assisted in its preclinical validations.

2020–23 Manipulator-Assisted UAV Landing System for USV

Research project at CUHK-Shenzhen, supervised by Prof. QIAN Huihuan.

My Contributions: Assisted in developing end-effectors and motion planning algorithms for a manipulator-assisted system that facilitates unmanned aerial vehicles (UAVs) landing on unmanned surface vehicles (USVs) in the presence of wave disturbances.

PUBLICATIONS[1]

Journal Articles

2025 L. Lei*, Y. Hu*, **Z. Jiang***, J. Miao, X. Luo, Y. Zhang, Q. Wang, S. Wang†, Z. Li†, and P.-A. Heng, "Towards Lung Ultrasound Automation: Fully Automonous Robotic Longitudinal and Transverse Scans Along Intercostal Spaces," in *IEEE Transactions on Medical Robotics and Bionics (T-MRB)*, Early Access, 2025, doi: 10.1109/TMRB.2025.3550663.

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.

Conference Papers

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

2024 C. Liu, Z. Cao, **Z. Jiang**, R. Xu, X. Ji, and H. Qian, "Unmanned aerial vehicle landing system, landing method and storage medium," Chinese patent CN115167522B, granted Nov. 1, 2024.

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 Feb. 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 Aug. 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 Aug. 30, 2022.

ABSTRACTS & PRESENTATIONS

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 Ultrasonography", 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.

OPEN SOURCE CONTRIBUTIONS

Author & Maintainer

`ndi_ros2_driver` (https://github.com/zixingjiang/ndi_ros2_driver): ros2_control integration for Northern Digital Inc. (NDI) electromagnetic tracking and optical navigation systems.

`minimal_handeye_ros2` (https://github.com/zixingjiang/minimal_handeye_ros2): A minimal hand-eye calibration node for ROS 2.

[1] Notations: * co-first authors, † corresponding authors.

Contributor

`cartesian_controllers` (https://github.com/fzi-forschungszentrum-informatik/cartesian_controllers): A set of Cartesian controllers for the ROS1 and ROS2-control framework.

ACADEMIC SERVICE

Reviewer

The IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2025

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
Recruited members, coordinated events, and provided weekly robotics tutorials.

AWARDS

2024 Bronze Award (Team), The 14th "Challenge Cup" QinChuangYuan Platform National College Students' Entrepreneurship Competition, China
ColoMAG: A Magnet-Assisted System for Colorectal Cancer Screening and Early Surgical Treatment.

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

2021–22 The 17–19th rounds of Undergraduate Research Award, CUHK-Shenzhen
Bio-inspired Aquatic-Aerial Hybrid Locomotion Robot.

2020 RoboCom[2] Robot Developer Competition – "Treasure Hunter" Southern China Regional Competition
Second Prize (Team) in Semi-Autonomous Robot Palletizing Competition;
Third Prize (Team) in Semi-Autonomous Robot Palletizing Timed Race;
Third Prize (Team) in Autonomous Robot Palletizing Competition.

TECHNICAL SKILLS

Coding Python, C++, C, MATLAB, Shell Scripts

Robotics Full-stack robot development experience with a particular focus on motion planning and control

Software Libraries: ROS, Eigen, NumPy, OpenCV, Open3D, PyTorch
Simulators: Gazebo, CoppeliaSim, SOFA
3D Modeling: SolidWorks, Blender
Miscellaneous: Docker, 3D Slicer

Hardware Platforms: Linux, Arduino, Raspberry Pi, STM32, ESP32, FPGA
Robots: Manipulator, Ornithopter, UAV, USV, UGV
Sensors: RGB-D Camera, Force/Torque Sensor, Optical Tracker, Electromagnetic Tracker

[2] RoboCom renamed to in 2023.

Interfaces: Haptic Devices, Joysticks
Medical Imaging: 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: 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: Undergraduate Final Year Project Supervisor.