Jiarui Li

Tel: (+86) 19801162393 | Email: lijiarui@pku.edu.cn | Website: https://jrli.org/

EDUCATION

Peking University (PKU) Beijing, China
***B.E. in Robotics Engineering* (Rank 2 in class, GPA 3.7 / 4.0)** *Sep 2020 – Jul 2024 (expected)*

- **Relevant Curriculum:** Introduction to Machine Learning (94), Computer Vision (91.2), Set Theory and Graph Theory (91), Practice of Programming in C and C++ (93), Robotics Experiments (I) (91), Introduction to Computation (A) (91), Theoretical Mechanics (91), Electromagnetism (96), Social Statistics (91)
- **Technical Skills:**

- Programming Skills: Python, C/C++, MATLAB & Simulink, Embedded System (Arduino, STM32)
- AI & Robotics: ROS, Gazebo, PyBullet, SolidWorks, Moveit!, OpenCV, PyTorch, UR & Kinova manipulator

PUBLICATIONS

(*indicates joint first authors)

[C2] Yao Su*, **Jiarui Li***, Ziyuan Jiao*, Meng Wang, Chi Chu, Yixin Zhu, Hangxin Liu, "Planning Sequential Aerial Manipulation for Over-actuated UAMs", in *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2023. (submitted)*

[C1] Yao Su*, Chi Chu*, Meng Wang, **Jiarui Li**, Yang Liu, Yixin Zhu, Hangxin Liu, "Downwash-aware Control Allocation for Over-actuated UAV Platforms", in *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022.*

[J1] Wanlin Li*, Meng Wang*, **Jiarui Li**, Yao Su, Devesh K. Jha, Xinyuan Qian, Kaspar Althoefer, Hangxin Liu, "L^3 F-TOUCH: A Light-weight, Low-cost and WireLess GelSight Sensor with Extended Three-axis Force Sensing", IEEE Robotics and Automation Letters (RA-L), *2023. (submitted)*

RESEARCH EXPERIENCE & SELECTIVE PROJECTS

Aerial Robotics: UAV & UAM's Design, Control and Planning Beijing, China
Beijing Institute for General Artificial Intelligence (BIGAI) *Jan 2022 – present*
Supervisor: Dr. Yao Su, Prof. Yixin Zhu, Dr. Hangxin Liu, Prof. Song-Chun Zhu

- Designed and built a fully-actuated UAV platform; Implemented an optimal controller to avoid the downwash disturbance during flipping motion; Further designed a lightweight manipulator, integrated it into the UAV platform, implemented the planning and control algorithms to install a spare part on the ceiling.
- Accumulated experience in mechatronic design and the implementation of control and planning algorithms. These hardware-related experiences can help me deal with problems like algorithm implementation efficiently.
- The results of these works have been concluded in a few papers in IROS 2022 and IROS 2023 (submitted).

Collective Intelligence: Evolutionary Game Theory, Game & Cooperation on Complex Network Beijing, China
Peking University, Supervisor: Prof. Aming Li, Dr. Lecheng Ruan, Prof. Long Wang *Sep 2022 – present*

- Used Monte Carlo Simulation to explore game strategy's evolution on complex networks, including Scale-Free network and Erdős-Rényi network, aimed to explain the emergence of cooperation in the sizeable structured group. Compared the effects of different parameters and try to explain this phenomenon clearly.

Computer Vision: Image Processing, Classification, Object Detection, Segmentation, etc. Beijing, China
Peking University, Supervisor: Prof. Yixin Zhu, Dr. Siyuan Huang *Sep 2022 – Jan 2023*

- Used a transformer-based model to deal with transparent object segmentation problems. This task aims to develop a vision-based biological experiment monitoring system where transparent objects are pervasively used.
- Accumulated experiences in image processing, OpenCV, and PyTorch-based deep learning, including image classification, object detection, semantic segmentation, and other aspects during this final project and other course projects.

Machine Learning: Image and Video Classification, RL for manipulator's motion planning *Peking University*

Force sensor with Gelsight: Novel Sensor design and application with manipulator Beijing, China
Beijing Institute for General Artificial Intelligence (BIGAI) *Jun 2022 – Feb 2023*
Supervisor: Dr. Wanlin Li, Dr. Meng Wang, Dr. Hangxin Liu

- Designed and built the L^3 F-TOUCH sensor, an enhanced version of the classic GelSight sensor, to acquire a much better three-axis force sensing capability while being light-weight, low-cost and wireless for the ease of replication and deployment.
- Learned how to design and carried out persuasive experiments. Accumulated rich experience in hardware design and manipulator programming (sensing, planning, and actuating) with Moveit! and ROS.

APPOINTMENTS

Beijing Institute for General Artificial Intelligence (BIGAI) Beijing, China
Research Assistant in Robotics Lab, Advisor: Dr. Hangxin Liu *Jan 2022 – present*

HONORS & AWARDS

- **Intern Outstanding Contribution Award** from Beijing Institute for General Artificial Intelligence 2023
- **University Merit Student** from Peking University 2022
- **Schneider Scholarship** from College of Engineering 2022