Jiarui Li

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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, mmdetection, PyTorch

PUBLICATIONS

(*indicates joint first authors)

[C2] Yao Su*, **Jiarui Li***, Ziyuan Jiao*, Meng Wang, Chi Chu, Song-Chun Zhu, 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.*

RESEARCH EXPERIENCE & SELECTIVE PROJECTS

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

- 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 experiences 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, including one in IROS 2022 and one submitted to IROS 2023, as listed in the "publications" section.

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*

MATLAB based Modeling and Analysis of a Wire-Driven Flexible Robotic Arm *Peking University*

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