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Shuyang Shi

EDUCATION

Carnegie Mellon University   Pittsburgh, PA

Master of Science in Robotics, GPA: 4.0/4.0   Aug. 2025

Selected Coursework: Introduction to Robot Learning, Mathematical Foundation for Robotics

Shanghai Jiao Tong University   Shanghai, China

Bachelor of Science in Mechanical Engineering, GPA: 3.84/4.3   June 2023

Selected Coursework: Robotics, Artificial Intelligence, Modeling Analysis and System Control, Computer Vision

SKILLS

Programming Languages: Python, C/C++, Matlab.

Robotics and Automation: Control algorithms, multi-robot systems, and system design.

Machine Learning: Deep reinforcement learning, transfer learning, and computer vision.

Software & Tools: ROS, PyTorch, RLlib, OpenAI Gym, SolidWorks, Simulink, and Adams.

ACADEMIC RESEARCH

Carnegie Mellon University School of Computer Science   Pittsburgh, PA

Action Advising for Efficient RL in Ad Hoc Teaming | supervised by Prof. Katia Sycara   Oct. 2023 – Present

- Develop policy transfer strategy based on action advising to enhance reinforcement learning efficiency in multi-agent ad hoc teaming, focusing on accelerating policy adaptation of new team members for improved collaboration.

Kent State University College of Aeronautics & Engineering (Remote)   Shanghai, China

Efficient Large-Scale Team Behavior Manipulation | supervised by Prof. Rui Liu   June 2022 – Jan. 2023

- Established a distributed behavior control pipeline using social network insights and reinforcement learning for large-scale multi-agent teams; responsible for the design of MARL framework and multi-agent control pipeline.

Shanghai Jiao Tong University School of Mechanical Engineering   Shanghai, China

Active Vision of Coordinated Ground Vehicle Systems | supervised by Prof. Wei Dong   Dec. 2022 – June 2023

- Cooperated with Shanghai Special Equipment Inspection Institute. Initiated a collaborative vision control framework for multiple ground vehicles, enabling vision-based localization of an aerial vehicle for safe navigation.
- Guaranteed robust UAV localization for 96.6% of the experiment duration, utilizing a team of two ground vehicles.

Adaptive Control of UAVs with Parameter Estimation | supervised by Prof. Wei Dong   Oct. 2021 – May 2022

- Proposed an adaptive control method with mass-inertia estimation and disturbance rejection tailored for multi-rotor UAVs in aerial transportation tasks.
- Reduced mass estimation error to 2% in four seconds and achieved high-quality trajectory tracking performance in simulation.

Design of an Integrated Unmanned Quadruped-Hexarotor System | supervised by Prof. Wei Dong   Mar. 2021 – Sep. 2021

- Designed a hexarotor UAV capable of grasping and transporting a quadruped robot through an adaptive docking structure; responsible for vision-based localization algorithm development and serial communication system design for UAV-quadruped data exchange.

ACADEMIC PROJECTS

Navigation for UR-10 Manipulator | Shanghai Jiao Tong University   Apr. 2022 – June 2022

- Implemented a navigation system for UR-10 manipulator and verified on Simulink; responsible for dynamics modeling and path planning algorithm design.
- Enhanced self-collision avoidance based on artificial potential field algorithms.

Others: Obstacle-Climbing Robot, Mobile Robot Path Planning, Foldable Wave Energy Capture Robot.

PUBLICATIONS

- **Shi, Shuyang,** Yuzhu Li, and Wei Dong. "RISE-Based Adaptive Control with Mass-Inertia Parameter Estimation for Aerial Transportation of Multi-Rotor UAVs." *arXiv preprint arXiv:2209.08209* (2022).
- Shan, H., Chen, G., **Shi, S.**, Qin, Z. W. M., & Dong, W. (2021, November). Dragon Rider-An Integrated Unmanned Quadruped-Hexarotor System for Flight-Impeded Area Exploration. In *2021 27th International Conference on Mechatronics and Machine Vision in Practice (M2VIP)* (pp. 411-416). IEEE.