✉ shuyangs@andrew.cmu.edu   📞 (412) 679-9902   🌐 https://sy-shi.github.io

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, planning, 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

Enhance Reinforcement Learning with LLM Feedback | supervised by Prof. Katia Sycara   May. 2024 – Present

- Proposed and verified an RL framework which exploits LLM feedback for reward specification based on potential functions. Improved learning efficiency compared with traditional RLHF algorithms.

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

- Developing policy transfer strategy based on action advising to enhance reinforcement learning efficiency in multi-agent ad hoc teaming, focusing on accelerating policy adaptation of unknown teammates.

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

Creative Mobile Robot Wall-Painting | Carnegie Mellon University   Jan. 2024 – May 2024

- Implemented a mobile manipulator navigation framework for flexible wall-painting based on STRETCH-RE1 platform; responsible for ROS software development.
- Integrated pre-trained VLM models to enable image-to-stroke creative painting.

Guided Exploration for Safe RL in Self-Driving | Carnegie Mellon University   Oct. 2023 – Dec. 2023

- Explored value-based schemes for guided RL with imperfect expert demonstrations. Tested the methods in a self-driving scenario. Effectively reduced training cost and improved sample efficiency compared with vanilla RL algorithms.

✉ shuyangs@andrew.cmu.edu 📞 (412) 679-9902 🌐 https://sy-shi.github.io

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 (see website): Obstacle-Climbing Robot, Mobile Robot Path Planning, Foldable Wave Energy Capture Robot.

PUBLICATIONS

- Lin, M., **Shi, S.**, ... & Sycara, K. P. Navigating Noisy Feedback: Enhancing Reinforcement Learning with Error-Prone Language Models. Submitted to EMNLP 2024.
- Lin, M., **Shi, S.**, ... & Sycara, K. P. A Reward Analysis of Reinforcement Learning from Large Language Model Feedback. In *Workshop on Reinforcement Learning Beyond Rewards@ Reinforcement Learning Conference 2024*.
- **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.