

Shangyi Luo

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RESEARCH INTERESTS

My research interests focus on perception and planning for intelligent robotic systems. I hope to improve the ability of robots to understand and adapt to complex environments. Ultimately, my goal is to enable robots to interact intelligently with both physical and social surroundings in open and dynamic scenarios.

EDUCATION

Harbin Institute of Technology

Sep 2021 - Present

B.E. in Automation (Shenzhen Campus), GPA: 86.331/100

Awards: First-Class Academic Scholarship

PUBLICATIONS

- [1] **S. Luo**, J. Zhu*, P. Sun*, Y. Deng, C. Yu, A. Xiao, X. Wang, "GSON: A Group-based Social Navigation Framework with Large Multimodal Model ", In submission). [\[Paper\]](#) [\[Video\]](#)

EXPERIENCE

Center for Artificial Intelligence and Robotics, Tsinghua SIGS

Octo 2023 – Present

Research Intern with [Prof. Xueqian Wang](#)

Shenzhen, China

- Developed a group-based social navigation framework (GSON) to enable mobile robots to perceive and exploit the social group of their surroundings by leveling the visual reasoning capability of the Large Multimodal Model.
- Designing a retrieval-augmented framework to resolve large-scale semantic ambiguity in outdoor navigation by synergizing aerial-view context and geospatial knowledge bases, with ongoing validation in wilderness search scenarios.

Bambu Lab

Jul 2024 – Oct 2024

Machine Learning Engineer Intern

Shenzhen, China

- Created a simulation environment of industrial scenes using Blender to support the data generation and testing pipeline for detection algorithm development.
- Applied YOLO and YOLO-world for few-shot, fine-tuning parameters to ensure effective object recognition with limited samples. Explored few-shot learning techniques with transfer learning and data augmentation to improve model accuracy and robustness in industrial applications.

PROJECTS

RoboMaster Infantry Robot Design and Optimization

Dec 2021 – Dec 2023

Main Contributor, RoboMaster Robotics Competition

- Focused on modular design, including gimbal, chassis, firing module, and wheel assembly, with an emphasis on weight reduction and cost control.
- Leveraged previous designs to upgrade a high-performance infantry robot with excellent firing, movement, and collision resistance capabilities.
- Lead young team members in overcoming technical challenges and accelerating the development of competitive, high-performance robots.

CADC Drone Power System and Payload Design

Apr 2023 - Dec 2023

Project Lead, China University Student Aircraft Design Innovation Competition

- Selected optimal power systems, such as motors, propellers, and batteries, based on mission requirements to ensure sufficient thrust and flight endurance.
- Designed an effective payload bay for the safe and accurate transportation and release of specified payloads.
- Conducted iterative flight tests to collect performance data, refining design, and control strategies to improve drone reliability and stability.

SKILLS

- **Programming:** C++, Python, Matlab, CMake, HTML, Data Structure and Algorithm
- **Tools:** LaTeX, Pytorch, Git, Linux, OS, Windows
- **Interest:** Table tennis, Badminton, Running
- **Languages:** Chinese: Native. English: Advanced (IELTS 7.0)

VOLUNTEER EXPERIENCE

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|--|--------------------------------|
| • Youth Volunteer Service Organization | <i>April 2022 - April 2023</i> |
| • Elderly Care Visits | <i>July 2021</i> |
| • Community Volunteer During Pandemic | <i>Jan 2021</i> |