Zixiang He

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EDUCATION BACKGROUND

University of Manchester **09/2024 - Present**

- MSc Robotics

Xi'an University of Science and Technology, China **09/2020-06/2024**

- BEng Intelligent Science and Technology Engineering
- GPA: 88.45/100(3%)

RESEARCH PROJECTS

Research on Resource Allocation of Autonomous Swarm Robots Based on Game Theory

Position: First Author *Paper Link: https://www.mdpi.com/2079-9292/12/20/4370*

- Proposed a two-stage extended game model to certify the existence of the sole Nash equilibrium point in the game;
- Developed a reverse-distributed iterative searching algorithm to find the best strategy in the game;
- Maximized the benefits of both game sides and achieved the optimal allocation of computing resources of swarm robots;
- The paper was accepted by the journal *Electronics (SCI Q2)*

Research on Stackelberg Game Decision Analysis of Multi-Agent System Based on LLM

Position: First Author

- Integrated an LLM into a multi-agent system for decision analysis within the framework of game theory;
- Employed the Stackelberg Game as the interaction principle among agents to guide decision-making towards Nash equilibrium, with experimental results validating the effectiveness of the proposed approach；
- Introduced prompt engineering to optimize LLM outputs, and conducted experiments comparing the optimal decision-making capabilities across different numbers of shots and various LLMs；
- Paper received the Outstanding Graduate Thesis award and was exhibited as the most distinguished thesis in the school.

INTERNSHIP EXPERIENCE

Hangzhou Right Side Robot Technology Co., Ltd. **06/2024-09/2024**

Robot Algorithm Intern

- Implemented admittance control on a robotic arm to achieve compliant control and utilized Moveit2! for robotic arm control;
- Resolved the issue of algorithm output incompatibility with the current robotic arm control interface, as described in the paper *Perceptive Model Predictive Control for Continuous Mobile Manipulation*;
- Successfully ran the algorithm in a ROS1 environment and bridged ROS1 and ROS2 topics to transfer the algorithm output to the ROS2 robotic arm control program.

Beijing A4x Technology Co., Ltd. **03/2024-06/2024**

Embodied Intelligence Algorithm Intern

- Developed control programs for specific robotic arm actions, such as finding objects, and improved the pose generation algorithm for the robotic arm's attend_to_object action;
- Debugged the robotic arm control program to achieve integrated operations from finding objects to attending to and grasping them;
- Optimized LLM prompts in the control program to enhance the model's ability to generate effective control code.

PRIZES

- **Outstanding Undergraduate Graduates(1 of 30)**
- **Outstanding Graduate Thesis**
- **Outstanding Substitute Class Teacher**

ADDITIONAL INFORMATION

Languages: Chinese (native); English (proficient, IELTS overall 6.5)
Skills: ROS2 , PYTHON , C++