Jingxiang GUO

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EDUCATION

Harbin Institute of Technology **Harbin, China**

- BEng in Automation (Ranked 5th in China by the QS 2023), GPA: 86/100 **Aug 2021 - Jun 2025**
- **Focus on:** Linear Algebra (87), C++ Programming (85), Analog & Digital Electronic Experiments (91 & 97)

RESEARCH & PROJECT EXPERIENCE

Fully-Distributed Actor-Critic Algorithm | Research Assistant **Sep 2023 - Present**

- Served as an RA, focusing on RAML problems (Supervisor: Prof. Hongwei Zhang, National Multi-Agent System Lab)
- Designed algorithms for the multi-armed bandit problem to address more complex MARL challenges. Undertook the task of refining and modifying the Python codebase
- Decomposed tasks based on the environment, and determined whether to increase agents to address the problem with fewer agents initially by inferring neighbors' types through history (from MAB to MARL)
- Collaborated with colleagues on a research paper that is currently under review for publication

RLGroup Lab | Research Assistant **Jun 2023 - Present**

- Served as an RA, focusing on improving the performance of RL methodology (Supervisor: Prof. Yanjie Li, National Reinforcement Learning Lab)
- Developed a novel loss function to stabilize autonomous driving agents. Introduced Odd-Even Data Permutation to segment LiDAR data by parity, reducing 32% overfitting in neural network inputs compared to the original method. Monitored and analyzed real-time agent behaviors to validate function efficiency
- Collaborated on an adaptive learning rate approach based on log segmentation of loss distances. Validated effectiveness using OpenAI Gym environments and co-authored a related research paper
- Exploring Softmax pre-processing for noisy environments, achieving a 14% improvement over the original method

Intelligent Unmanned Systems Club | Founder **Jun 2022 - Present**

- As a technical leader, designed an autonomous system based on RL. Through prompt engineering, it interacts with users and translates LLM outputs into motor command codes
- Designed the embedded framework and ROS communication algorithms, as well as the overall electrical architecture

PUBLICATIONS

"Logarithmic Function Matters Policy Gradient Deep Reinforcement Learning" **Dec 2023**

- Scholarly article, pre-printed on arXiv as second-author (DOI: 10.6084/m9.figshare.25027334.v1)
- The study investigates the effect of logarithmic bases on policy gradient methods in deep reinforcement learning, introducing the Logarithmic Basis Policy Gradient (LBPG) and Adaptive LBPG algorithms

"Multi-Agent Target Assignment and Path Finding for Intelligent Warehouse: A Cooperative Multi-Agent Deep Reinforcement Learning Perspective" **Jan 2024**

- Scholarly article, pre-printed on arxiv(DOI: 10.6084/m9.figshare.25036370.v1)
- A novel algorithm for multi-agent target assignment and path planning in intelligent warehouses using cooperative multi-agent deep reinforcement learning has been introduced, resulting in efficient solutions in various scenarios

"A novel fast-reversing device for rail system" **Apr 2023**

- National patent, published as second-inventor(URL: https://patents.google.com/patent/CN116000896A/en)
- The track-based robotics technology with a walking mechanism and rotating wheel system allows for rapid reverse movements while addressing issues such as slow response, high kinetic energy loss, and damage to the motor.

SKILLS & INTERESTS

- **Language Skills:** English (IELTS 7.5), Chinese (Native)
- **Quantitative & Programming Skills:** Skilled in mathematical methods. Mastered in Python, C, C++, and MATLAB
- **Interest:** Experienced in trekking and climbing, forging a resilience will that stands unwavering

HONORS & ACHIEVEMENTS

- **First Prize**, The 21st National University Robotics Competition (National Final) **Aug 2023**
- **First Prize**, The 6th China Intelligent Robots Innovation Competition **Jul 2023**
- **Second Prize**, The 6th National University Contest on Design of Embedded Chip and Systems **Jun 2023**