Haoyu Liang

Education

Sun Yat-sen University   *Shenzhen, China*
BEng in Intelligent Science and Technology   *Sept 2021 - June 2025*

- **GPA:** 3.5/4.0
- **Core Courses:** Linear Algebra, Probability and Statistics, Engineering Mathematics, AI Programming Language, Intelligent Robotics Technology, Automatic Control Principles, Computer Vision

Research Experiences

Human Tracking and Fall Detection System via mmWave Radar   *Shenzhen, China*
Graduation Thesis | Advisor: Professor Bo Gu   *Jan 2025 - May 2025*

- Utilizing a Texas Instruments IWR1443BOOST mmWave radar to collect point cloud data, developed a non-invasive system for human tracking and fall detection.
- Achieved 95.3% identification accuracy in single-target tracking with real-time processing by implementing a dynamic adaptive DBSCAN algorithm.

Sun Yat-sen University, School of Intelligent Systems Engineering   *Shenzhen, China*
Independent Study | Advisor: Professor Bo Gu   *Jan 2024 – Aug 2024*

- Supported by the National Natural Science Foundation of China, aiming to tackle the challenges of joint spectrum and power allocation in Cellular Vehicle-to-Everything networks.
- Proposed an innovative method that integrates Graph Neural Networks with Deep Reinforcement Learning to extract low-dimensional global features from dynamically changing network topologies and encourages cooperative behavior and adaptability.
- Simulation results validated that the algorithm outperforms state-of-the-art methods in highly dynamic vehicular network environments.

SCARA Robot Programming for Palletizing Operations   *Shenzhen, China*
Research Project | Advisor: Professor Zhi Jin   *Nov 2023 - Dec 2023*

- Led a team of four to develop control algorithms for SCARA robots, achieving precise positioning through automated palletizing operations to rearrange randomly positioned cylindrical and cubic objects.
- Coordinated team efforts by organizing weekly meetings and creating bi-weekly progress reports to ensure efficient collaboration and timely project progress.

UAV Machine Vision and Flight Control using Deep Reinforcement Learning   *Shenzhen, China*
Research Project | Advisor: Professor Bo Gu   *Sept 2023 – Nov 2023*

- Programmed machine vision modules using OpenMV IDE for real-time object detection on drones.
- Applied Deep Reinforcement Learning with Double Deep Q-Networks to UAV flight control, enabling real-world autonomous obstacle avoidance.

Publications

- Zheng, B., **Liang, H.**, Ling, J., Gong, S., & Gu, B. (2024). Integrating Graph Neural Networks with Multi-Agent Deep Reinforcement Learning for Dynamic V2X Communication. *Proceedings of the 20th IEEE International Conference on Mobility, Sensing and Networking (MSN 2024)*, pp. 398-405. doi:10.1109/MSN63567.2024.00062

Professional Experiences

Huawei Technologies Co., Ltd.   *Guangzhou, China*
Blockchain Middleware Development Intern, Xiang Wei's team   *July 2024 – Sept 2024*

- Architected and developed blockchain middleware and smart contracts using Go, optimizing the monitoring process for large-scale government investment projects.
- Contributed to the Guangdong Government's key investment project, enhancing transparency in public fund management and supervision.

Guangzhou Tinci Materials Technology Co., Ltd. *Guangzhou, China*
Solutions Architect Intern, Jianlong Liang's team *July 2023 – Aug 2023*

- Engineered and implemented an Automated Guided Vehicle (AGV) system using C++ to navigate robots transporting raw material barrels within a warehouse.
- Devised and optimized path-planning and obstacle-avoidance algorithms, reducing raw material transportation time by 32% and enhancing warehouse logistics efficiency.

Honors and awards

- **Third Prize in the Guangdong Contemporary Undergraduate Mathematical Contest in Modeling 2023** *Sept 2023*

Technologies

Programming: C++, C, Java, Python, Go, SQL, Matlab, LaTeX
Framework: PyTorch, TensorFlow, Gym, scikit-learn
DevTools: Git(version control system), Linux(operating system)
Languages: Chinese(Native), English(TOEFL:99), French(DELF A1)