Mingyang Jiang

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EDUCATION

Shanghai Jiao Tong University Shanghai, China

School of Electronic Information and Electrical Engineering *Sept. 2019 – Jun. 2023*

Bachelor in Artificial Intelligence

- **GPA: 3.86 / 4.0 Rank: 6 / 74**
- **Core Courses:** Machine Learning, Reinforcement Learning, Computer Vision, Natural Language Processing, Brain-Inspired Intelligence, Data Mining, Game Theory and Multi Agent Learning

Master in Control Science and Engineering *Sept. 2023 – Present*

- **GPA: 3.84 / 4.0**
- **Advisor: Prof. Ming Yang**
- **Core Courses:** Optimization in Learning and Control, Stochastic Methods in Systems and Control, Fundamentals and Applications of Game Theory, Artificial Neural Networks, Matrix Theory

PUBLICATIONS & WORKS

HOPE: A Reinforcement Learning-based Hybrid Policy Path Planner for Diverse Parking Scenarios
Mingyang Jiang†,, Yueyuan Li†, Songan Zhang, Siyuan Chen, Chunxiang Wang, and Ming Yang
(Accepted by) IEEE Transactions on Intelligent Transportation Systems (T-ITS), 2025
[Paper], [Video], [Code], [PaperWithCode]

Embodied Escaping: End-to-End Reinforcement Learning for Robot Navigation in Narrow Environment
Han Zheng†, Jiale Zhang†, **Mingyang Jiang**, Peiyuan Liu, Danni Liu, Tong Qin, and Ming Yang
(Submitted to) IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2025
[Paper], [Video]

Lidar OGM-Based Hybrid Reinforcement Learning Planner for Autonomous Parking
Zhitao Wang†, Zhe Chen†, **Mingyang Jiang**, Tong Qin, Ming Yang
(Accepted by) IEEE International Conference on Robotics and Automation (ICRA), 2025
[Paper]

Tactics2D: A Highly Modular and Extensible Simulator for Driving Decision-Making
Yueyuan Li, Songan Zhang, **Mingyang Jiang**, Xingyuan Chen, Yeqiang Qian, Chunxiang Wang, Ming Yang
(Published at) IEEE Transactions on Intelligent Vehicles (T-IV), 2024
[Paper], [Code], [Website]

End-to-end Driving in High-Interaction Traffic Scenarios with Reinforcement Learning
Yueyuan Li†, **Mingyang Jiang†,**, Songan Zhang, Wei Yuan, Chunxiang Wang, and Ming Yang
(Under progress) arXiv preprint arXiv:2410.02253
[Paper]

All You Need Is One Camera: An End-to-end Autonomous Driving Framework for Vehicle Following
Jiale Zhang, Yeqiang Qian, Tong Qin, **Mingyang Jiang**, Siyuan Chen, and Ming Yang
(Under progress)
[Video]

(†: Co-first author)

RESEARCH

Shanghai Jiao Tong University Shanghai, China

Research Assistant at **CyberC3 Intelligent Vehicle Lab**, Advised by **Prof. Ming Yang** *Sept. 2023 – Present*

Research Topic: Motion Planning for Mobile Robots in Confined Spaces.

- Developed a reinforcement learning-based planning framework for narrow environments, validated on full-size car parking maneuvers and robotic vacuum escape scenarios..
- Proposed a hybrid training approach fusing prior strategies with reinforcement learning agent, significantly boosting efficiency and planning effectiveness.
- Integrated an action mask mechanism to encode collision constraints within the neural network, ensuring safe and reliable planning in real-world settings.

Research Topic: Integrated Perception and Planning for Intelligent Vehicles in Dynamic Traffic Environments

- Developed an open-source simulation platform integrating mainstream trajectory datasets to generate diverse, interactive traffic scenarios (intersections, highways, parking, roundabouts, etc.).
- Designed an end-to-end training framework based on a world model that fuses image and LiDAR data to extract decision-making features, validated in CARLA simulator across dynamic traffic scenes.
- Designed a vision-based car-following system leveraging a single monocular fish-eye camera that integrates perception and planning, ensuring robust tracking in dynamic traffic conditions.

LEADERSHIP & ACTIVITIES

CHINA ROBOT COMPETITION | *Competition* Shanghai, China

SJTU Team (team member) *Dec. 2021-Apr.2022*

- Participated in the Intelligent Vehicle Challenge - 1:12 Scale Car Competition, successfully completing tasks including lane-following, traffic light and sign recognition, obstacle avoidance, and parking on a miniature map.

IEEE ITSC Trajectory Planning Competition for Automated Parking | *Competition* Shanghai, China

SJTU-CyberC3 Team (team member) *Aug 2022 – Oct 2022*

- Completed motion planning in complex and narrow scenarios on an online dataset. Rank 12/61 globally.

SJTU "Hope Cup" Football League (Division B) | *Leadership* Shanghai, China

School of Electronic Information and Electrical Engineering Team (Captain) *Sept. 2023 – Jun. 2024*

- Led team recruitment, training, and match strategies, organized intercollegiate competitions.

SERVICES

Reviewer

IEEE Transactions on Intelligent Transportation Systems (T-ITS)
IEEE Transactions on Intelligent Vehicles (T-IV)

Teaching Assistant: ECE6801G-49000-M01 *Sept. 2024 – Jan. 2025*

Deep learning (Fall 2024)
Global Institute of Future Technology, Shanghai Jiao Tong University

Teaching Assistant: AU7043-032-M01 *Feb. 2025 – Present*

Robot Decision-Making and Planning and Applications in Intelligent Vehicles (Spring 2024)
School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University

SKILLS

- Programming: Python (PyTorch, TensorFlow, NumPy, Opencv), C/C++, MATLAB, Linux Shell
- Robotics: ROS1/2, CARLA (UE4 simulator), CS55E-Rock (autonomous vehicle), robotic vacuum cleaner
- Software Tools: Docker, Git, Anaconda, Jupyter Notebook, LaTeX