

STEVEN GONG

✉ hailong.gong@anu.edu.au · 🌐 tommygong08.github.io · 🌱 Hailong Gong · in HailongGong

🎓 EDUCATION

Australian National University, Canberra, Australia Feb.2024 - Dec.2025

M.S. Computing

Beijing Institute of Technology, Beijing, China Sep.2018 - Jun.2022

B.S. Computer Science and Technology

👥 EXPERIENCE

Shenzhen Yimeizhi Technology Co., Ltd Shenzhen, China Mar.2023 - Dec.2023

Computer Vision Algorithm Engineer HR Manager: Wenxian Gan

- Designed and optimized algorithms for an Automatic Optical Inspection system to detect defects in PCB.

Beijing Institute of Technology Beijing, China Jul.2022 - Jan.2023

Research Assistant Supervisor: Prof. Jianwei Gong

- Conducted research on trajectory prediction and decision-making processes for autonomous vehicles.

ByteDance, Quality Lab Beijing, China Oct.2021 - Feb.2022

Algorithm Engineer Intern Supervisor: Zhao Zhang

- Optimized reinforcement learning algorithms in the software testing tool Fastbot.
- Enhanced test coverage and problem interception rate, significantly improving efficiency and quality.

📖 PUBLICATIONS

- **Leveraging Multi-Stream Information Fusion for Trajectory Prediction in Low Illumination Scenarios: A Multi-channel Graph Convolutional Approach** *HaiLong Gong*, ZiRui Li, Chao Lu, GuoDong Du, JianWei Gong, IEEE Transactions on Intelligent Transportation Systems (T-ITS).
- **Towards Online Risk Assessment for Human-robot Interaction: A Data-driven Hamilton-Jacobi-Isaacs Reachability Approach**, *HaiLong Gong*, ZiRui Li, Chao Lu, JianWei Gong, 26th IEEE International Conference on Intelligent Transportation Systems (ITSC2023).
- **Towards Safe, efficient and Co-operative Decision-making for CAVs in Mixed Autonomy: An Attention-Enhanced Graphic Reinforcement Learning Approach** *HaiLong Gong*, ZiRui Li, RunHao Zhou, Qi Liu, Chao Lu, JianWei Gong, The 4th Symposium on Management of Future Motorway and Urban Traffic Systems 2022 (MFTS 2022).
- **Fast and Accurate: Perception System of a Formula Student Driverless Car** *HaiLong Gong*, Yunji Feng, TaiRan Chen, ZuoOu Li, YunWei Li, 2022 6th International Conference on Robotics, Control and Automation (ICRCA 2022).
- **Real-time Motion Planning and Control for a Formula Student Driverless Car** TaiRan Chen, *HaiLong Gong*, XinYu Gao, ChenRui Huang, Xiang Li, ShaoKun Yang, YunJi Feng, Annual Conference of Society of Automotive Engineers of China, 2020.

⚙️ SKILLS

- Programming Languages: Python, C/C++, Java, Golang
- Software Development: QT, HTML, CSS, SQL, Algorithms
- Tools for AI & ML: Pytorch, TensorFlow, Keras, OpenCV, Scikit-learn
- Operating Systems and Tools: Linux, Git, Docker, CI/CD
- Languages: English - Fluent, Mandarin - Native speaker

EXPERIENCE

Multi-Source Sensor Fusion-based Trajectory Prediction

May.2022 - Jun.2023

Instructor: Prof. Jianwei Gong, Prof. Chao Lu, Collaborator: Zirui Li

- Proposed an interactive trajectory prediction model based on multi-stream heterogeneous data fusion to enhance accuracy.
- Developed a novel ST-GCN-based embedding method to generate temporal and spatial features of traffic participants' trajectories and speeds, along with an LSTM-based image feature extraction method for self-adaptive attention capture.
- Implemented a flexible and versatile multi-stream heterogeneous data system.

Multi-vehicle Decision Based on GNN in Mixed Traffic Scenarios

May.2022 - Jun.2023

Instructor: Prof. Jianwei Gong, Prof. Chao Lu, Collaborator: Zirui Li

- Conducted research on safe, efficient, and cooperative decision-making for mixed-autonomy traffic involving connected and autonomous vehicles (CAVs).
- Introduced a graph attention mechanism to enhance rewards in the reinforcement learning environment.
- Designed comparative experiments demonstrating that integrating Graph Neural Networks with Deep Reinforcement Learning improves travel efficiency.

Research on Abnormal Driving Behavior for the safe Autonomy

May.2022 - Jun.2023

Instructor: Assistant Prof. Lili Su, Northeastern University, USA

- Developed efficient algorithms to detect abnormal driving behaviors and improve trajectory prediction through run-time information fusion from surrounding autonomous vehicles.
- Reproduced LSTM, CS-LSTM, and MultiEncoder-SingleDecoder Transformer models for vehicle trajectory prediction and applied information sharing to detect abnormal driving behavior.
- Suggested shortening model reasoning time to enhance real-time performance and usability, aiming to reduce abnormal behavior prediction time to under 100ms using lightweight models or improved algorithms.

Formula Driverless Vehicle Perception System Design and Implementation

Nov.2020 - Jun.2021

Project Leader, Instructor: Assistant Prof. Jie Cao

- Designed a fast, accurate, and scalable perception system for a formula student driverless car, enabling object detection, point cloud segmentation, and clustering.
- Implemented PP-YOLO for racetrack cone detection, GPF algorithm for ground segmentation, and Euclidean clustering for cone extraction.
- Achieved stable sensory results by fusing data from stereo cameras and LIDAR, reducing noise and mitigating environmental factors like light and weather.

HONORS AND AWARDS

Champion , Formula Student Autonomous China (FSAC), Nation Level	2020
1st Prize , ByteDance Summer Camp, Nation Level	2021
1st Prize , "Century Cup" Extracurricular Academic Competition, School Level	2021
Excellent Oral Presentation , 2022 6th International Conference on Robotics and Machine Vision	2022
2nd Class Scholarship , Beijing Institute of Technology, School Level	2022
3rd Class Scholarship , Beijing Institute of Technology, School Level	2019
3rd Prize , 17th "Century Cup" Competition, City Level	2020
3rd Prize , "Century Cup" Extracurricular Academic Competition, School Level	2021