

# Qianli Dong

ROBOTICS RESEARCHER · UAVS EXPERT

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## Education

### NEU (Northeastern University)

B.ENG. IN ROBOTICS ENGINEERING, FACULTY OF ROBOT SCIENCE AND ENGINEERING

Shenyang, China

Sep. 2018 - Jul. 2022

### NKU (Nankai University)

PH.D. STUDENT IN AUTOMATION (5 YEARS), COLLEGE OF ARTIFICIAL INTELLIGENCE (GRADUATING IN JUL. 2026)

Tianjin, China

Sep. 2022 - PRESENT

## Collaboration

### ZJU (Zhejiang University)

INTERN AT FASTRLAB, ADVISED BY PROF. FEI GAO

Huzhou, China

Jan. 2021 - Mar. 2021

## Skills

**Programming** Python, C/C++, Matlab, LabVIEW, LaTeX  
**Editing** Adobe Premiere  
**Languages** Chinese, English

## Research Interests

Autonomous Exploration, Multi-Robot Planning, UAVs, Trajectory Planning, Navigation, and Mapping.

## First Author Publications

(\*: Co-first author)

- **Qianli Dong**, Xuebo Zhang, Shiyong Zhang, Haobo Xi, Ziyu Wang, Zhe Ma, and Haobo Xi, “RIPNEON: Memory-Lite and Computation-Efficient Occupancy Mapping Via Block Read-Write and Key Grids Expansion,” in IEEE International Conference on Robotics and Automation (**ICRA2026**). [code]
- Ziyu Wang \*, **Qianli Dong** \*, Xuebo Zhang, Shiyong Zhang, Haobo Xi, Zhe Ma, and Mingxing Yuan, “Fast Exploration Planning with Learning-Based Motion Time Prediction for Aerial Robots,” in IEEE International Conference on Robotics and Automation (**ICRA2026**).
- **Qianli Dong**, Xuebo Zhang, Shiyong Zhang, Ziyu Wang, Zhe Ma, and Haobo Xi, “EDEN: Efficient Dual-Layer Exploration Planning for Fast UAV Autonomous Exploration in Large 3-D Environments,” in IEEE Transactions on Industrial Electronics (**TIE2026**). [code]
- **Qianli Dong**, Xuebo Zhang, Shiyong Zhang, Ziyu Wang, Zhe Ma, Tianyi Li, and Haobo Xi, “HIGHSTAR: High-Speed and Efficient Online Autonomous UAV Exploration,” in IEEE Transactions on Automation Science and Engineering (**TASE2025**). [code]
- **Qianli Dong** \*, Haobo Xi \*, Shiyong Zhang, Qingchen Bi, Tianyi Li, Ziyu Wang, and Zhang Xuebo, “Fast and Communication-Efficient Multi-UAV Exploration Via Voronoi Partition on Dynamic Topological Graph,” 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2024**). [code]

## Other Publications

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- Haobo Xi, Shiyong Zhang, **Qianli Dong**, Yunze Tong, Songyang Wu, Jing Yuan, and Xuebo Zhang, “R-VoxelMap: Accurate Voxel Mapping With Recursive Plane Fitting for Online LiDAR Odometry,” in IEEE Robotics and Automation Letters, vol. 11, no. 3, pp. 2402-2409, March 2026 (**RAL2026**).
- Lin, Yuwen, **Qianli Dong**, Xuebo Zhang, and Jie Zhang, “Fast sampling-based UAV exploration of unknown 3D environments with submodular information gain measure,” Measurement Science and Technology, 2026 (**MST2026**).
- Shiyong Zhang, Xuebo Zhang, **Qianli Dong**, Ziyu Wang, Haobo Xi, and Jing Yuan, “FSMP: A Frontier-Sampling-Mixed Planner for Fast Autonomous Exploration of Complex and Large 3-D Environments,” in IEEE Transactions on Instrumentation and Measurement, vol. 74, pp. 1-14, 2025 (**TIM2025**).
- Tianyi Li, Shiyong Zhang, Xuebo Zhang, **Qianli Dong**, and Junsheng Huang, “SGS-Planner: A Skeleton-Guided Spatiotemporal Motion Planner for Flight in Constrained Space,” in IEEE/ASME Transactions on Mechatronics, vol. 30, no. 1, pp. 191-202, Feb. 2025 (**TMECH2025**).
- Botao He, Haojia Li, Siyuan Wu, Dong Wang, Zhiwei Zhang, **Qianli Dong**, Chao Xu, and Fei Gao, “FAST-Dynamic-Vision: Detection and Tracking Dynamic Objects with Event and Depth Sensing,” 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2021**).

## Projects

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### Real-time Scheduling and Dynamic Planning for Swarm Robotics in Complex Manufacturing Environments

*Tianjin China*

HOSTED BY XUEBO ZHANG, CONDUCTED AT RAHAIC LAB IN NKU

*Jan. 2023 - Oct. 2027*

- In this project, we developed an efficient decentralized multi-UAV autonomous exploration system and a multi-UAV-oriented visualization software.
- I developed and deployed the multi-UAV exploration planner.

### Hardware-in-the-Loop Simulation Platform

*Tianjin China*

HOSTED BY SHIYONG ZHANG, CONDUCTED AT RAHAIC LAB IN NKU

*Jul. 2025 - Oct. 2025*

- In this project, we developed a Gazebo multi-robot simulation platform, which allows to use multiple computers to simulate multi-robot task. Based on this simulation platform, we developed a UAV-UGV inspection system.
- I developed the communication of the simulation platform.

## Competitions

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### The Simulation Group of the FIRA Small Size Group at the China Robot Competition

*Tianjin China*

ADVISED BY ZIXI JIA, **NATIONAL FIRST PRIZE**

*Nov.2020*

- The competition simulates a 5 vs 5 robot soccer match, and participants are required to complete the control and decision-making systems.
- I developed the control of differential drive robot and the multi-robot cooperation strategy.

### The 15th National Intelligent Vehicle Competition

*Nanjing China*

ADVISED BY SHIGUANG WEN, **NATIONAL FIRST PRIZE**

*Aug. 2020*

- The competition aims to develop an intelligent vehicle which is able to follow lane line, detect traffic signs, and avoid static obstacles with only a monocular camera.
- I collected the driving data and trained an autonomous driving model and a sign detecting model.

## Awards

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**Best Oral Presentation** at the 3rd Zhejiang University National Doctoral Forum on Swarm Intelligence in Unmanned Systems, 2024.

**Outstanding Poster Presentation** at the 2nd Zhejiang University National Doctoral Forum on Swarm Intelligence in Unmanned Systems, 2023

## Services

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### Reviewer

IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2024, 2025, 2026.

IEEE International Conference on Robotics and Automation (ICRA), 2022, 2026.

IEEE Robotics and Automation Letters (RAL), 2025, 2026.

IEEE China Automation Congress (CAC), 2023.