

Kun Chen

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EDUCATION

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| Harbin Institute of Technology, Shenzhen | Shenzhen, China |
| Bachelor of Engineering in Automation | Sep. 2021 - present |
| • GPA: 3.781/4.000, Rank: 22/256(8.59%) | |
| • Honors: | |
| – Best Bachelor Thesis Award of HITsz in Automation | 2025 |
| – Outstanding Graduates | 2025 |
| – National Scholarship | 2024 |
| – National Scholarship for Encouragement | 2022, 2023 |
| – First Class Academic Scholarship | 2022 |
| – Second Class Academic Scholarship | 2023, 2024 |
| – Outstanding Student Cadre | 2022 |
| – Outstanding Student | 2023 |
| – Outstanding League Member | 2022, 2023, 2024 |
| • Major Courses: | |
| Digital Image Processing(98), Machine Vision(91), Probability Theory(96), Complex Analysis(96), Automatic Control Theory: Part A (95) Part B (98), Signal Analysis and Processing(93), etc. | |
| • Language Proficiency: IELTS 6.5 (L6.5 R8.0 W5.5 S5.5). | |
| • Research Interests: My research is primarily focused on autonomous navigation for mobile robots, like planning algorithms. Currently, I am engaged in research with embodied AI. | |

COMPETITION AWARD

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| • RoboMaster University Technical Challenge | National First Prize | 2022.08 |
| • Siemens Cup China Intelligent Manufacturing Challenge | Provincial Second Prize | 2023.08 |
| • National Undergraduate Smart Car Contest | Provincial Third Prize | 2023.07 |

PUBLICATIONS

Li Yuxiang*, **Chen Kun***, Chen Haoyao (2024). “Collaborative Autonomous 3D Reconstruction for Heterogeneous Multiple UGVs in Complex Environments”. In: *2024 International Annual Conference on Complex Systems and Intelligent Science (CSIS-IAC)*. IEEE, pp. 858–865.

Li Yuxiang, **Chen Kun**, Chen Haoyao (2025). “Real-Time Multi-Level Terrain-Aware Path Planning for Ground Mobile Robots in Large-Scale Rough Terrains”. In: *IEEE Transactions on Robotics*.

* indicates equal contribution.

EXPERIENCE

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| • Research on Path Planning of Articulated Tracked Robot | Jan. 2024 - Sep. 2024 |
| nROS-Lab | Harbin Institute of Technology, Shenzhen |
| Advisor: Prof. Haoyao Chen | Department of Mechanical Engineering and Automation. |
| – Introduction: Proposed a real-time multi-level terrain-aware path planning framework to improve efficiency and success rates for autonomous robots navigating large-scale rough terrains. | |

- **Involvement:**
 - * Integrating terrain roughness, slope, and sparsity as terrain complexity, used as cost, deploy Dynamic A* for the robot's local path planning.
 - * Participated in the assembly and maintenance of articulated tracked robots and set up physical and simulation experiment environments.
 - * Analyzed and processed experimental data, drew paper pictures, and wrote papers.
 - **Outcome:** Wrote the paper *Real-Time Multi-Level Terrain-Aware Path Planning for Ground Mobile Robots in Large-Scale Rough Terrains* (as the second author), which was accepted to IEEE Transactions on Robotics(TR-O).
- **Research on Heterogeneous Multiple UGVs** Apr. 2024 - Aug. 2024
nROS-Lab Harbin Institute of Technology,Shenzhen
Advisor: Prof.Haoyao Chen Department of Mechanical Engineering and Automation.
 - **Introduction:** Proposed a hierarchical view planning framework to achieve near-optimal task allocation, effectively coordinating the view tasks of robots with different capabilities.
 - **Involvement:**
 - * Introduced map frontier, highly sparse grid cell, and occupied grid cell with observation angles exceeding thresholds as Incomplete Surface Elements (ISE). Then, classify and aggregate these ISEs.
 - * Modeled the viewpoint allocation problem for heterogeneous multi-robot systems in complex environments and solved it using the Genetic Algorithm.
 - * Designed a hierarchical view planning framework that enhances the efficiency and completeness of scene reconstruction.
 - * Improved supervoxel segmentation algorithm that achieves both geometric semantic representation and data compression.
 - * Introduced gimbal encoder-based odometry information as an observation model to correct the state estimation of the Kalman filter during the horizon LiDAR SLAM process, effectively addressing the SLAM drift issue.
 - **Outcome:** Wrote the paper *Collaborative Autonomous 3D Reconstruction for Heterogeneous Multiple UGVs in Complex Environments* (as the co-first author) and currently preparing another journal manuscript targeting submission to IEEE Transactions on Field Robotics.
 - **Research on unmanned aerial vehicle (UAV)** Aug. 2023 - Nov. 2023
nROS-Lab Harbin Institute of Technology,Shenzhen
Advisor: Prof.Haoyao Chen Department of Mechanical Engineering and Automation.
 - **Introduction:** Developed and manufactured physical unmanned aerial vehicle (UAV) and developed algorithms to achieve autonomous perception, localization, navigation, and obstacle avoidance functions.
 - **Involvement:**
 - * Independently designed the mechanical structure and hardware layout of a quadrotor drone.
 - * Deployed different control methods such as MPC, LQR, and PID to compare their path following performance.
 - * Deployed PX4 for lower-level flight control, use ego-planner for upper-level planning, and conduct physical experiments with a motion capture system for positioning.
 - * Learned how to use the Robot Operating System (ROS) and Gazebo.

SKILLS

Programming C, C++, Python, MATLAB, L^AT_EX
Tools ROS, Gazebo, SolidWorks, Git, Altium Designer