

# Kun Chen

 KunChen622 |  KunChen622 |  210330122@stu.hit.deu.cn |  +8615880665660

## EDUCATION

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  
– **Outstanding Student Cadre** 2022  
• **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 robot-manipulation, robotic planning and robotic perception.

## COMPETITION AWARD

• RoboMaster University Technical Challenge	<b>National First Prize</b>	2022.08
• Siemens Cup China Intelligent Manufacturing Challenge	<b>Provincial Second Prize</b>	2023.08
• National Undergraduate Smart Car Contest	<b>Provincial Third Prize</b>	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**, Wang Yifei, Zhang Weifan, Wang Jiancheng, Chen Haoyao, Liu Yunhui (2025). “Real-Time Multilevel Terrain-Aware Path Planning for Ground Mobile Robots in Large-Scale Rough Terrains”. In: *IEEE Transactions on Robotics* 41, pp. 4159–4179. DOI: [10.1109/TR0.2025.3577015](https://doi.org/10.1109/TR0.2025.3577015).

\* indicates equal contribution.

## EXPERIENCE

• **Research on Embodied Robot-Manipulation with Dexterous Hand** Jul. 2025 - present  
[nROS-Lab](#) Harbin Institute of Technology, Shenzhen  
Advisor: [Prof. Haoyao Chen](#) Department of Mechanical Engineering and Automation.  
– **Introduction:** Built robotic manipulation simulation environments in MuJoCo and explored learning-based control methods, including diffusion policy, for grasping tasks.  
– **Involvement:**  
\* Developed a robotic arm grasping environment in MuJoCo and collected expert demonstration

datasets through keyboard teleoperation.

- \* Trained a Diffusion Policy with joint states and object positions as inputs, enabling the model to generate action sequences for grasping tasks.

## • Research on Cross-Floor Autonomous Exploration

Nov. 2024 - Jul. 2025

nROS-Lab

Harbin Institute of Technology, Shenzhen

Advisor: Prof. Haoyao Chen

Department of Mechanical Engineering and Automation.

- **Introduction:** Developed a cross-floor autonomous exploration framework for complex building environments, addressing inefficiencies and incomplete reconstructions in traditional multi-floor robotic exploration.
- **Involvement:**
  - \* Proposed a robust and efficient stair detection method by fitting stair step edges from point cloud data, with a maintained stair set and semantic integration into the map to support dynamic semantic updates.
  - \* Proposed a priority-driven task planning scheme: formulated the Sequential Ordering Problem (SOP) using OR-Tools for global task sequencing, while employing Traveling Salesman Problem (TSP) optimization for efficient local planning.

## • Research on Heterogeneous Multiple UGVs

Apr. 2024 - Aug. 2025

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.
  - \* 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 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 A\* for the robot's global 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).

## SKILLS

---

Programming	C, C++, Python, MATLAB, L <sup>A</sup> T <sub>E</sub> X
Tools	ROS, Gazebo, SolidWorks, Git, Altium Designer