

Zihan Wang

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Education

The Chinese University of Hong Kong <i>M.S. in Robotics</i>	Aug 2025 – Present
Beihang University <i>B.E. in Automation</i> <ul style="list-style-type: none">GPA: 88.1/100	Sep 2021 – Jun 2025

Publications

PUB: A Plasma-Propelled Ultra-Quiet Blimp with Two-DOF Vector Thrusting
Yixing Zhang, **Zihan Wang**, Zhijun Li, Xuanlin Fan, Jiawei Zhang, Shaoping Wang
arXiv, 2025

Plasma-propelled ultra-quiet flying robot system and power combination control method
China Invention Patent CN118220461A

Research Experience

Tsinghua Laboratory of Brain and Intelligence, THU Undergraduate Research Assistant <ul style="list-style-type: none">Topic: 2D&3D SLAM algorithms for Zhixing Autonomous Car II	Mar 2025 – Jul 2025 Advisor: Prof. Jia Liu
Wang Lab, BUAA Undergraduate Research Assistant <ul style="list-style-type: none">Topic: Propelled Ultra-Quiet Blimp	Sep 2023 – Jun 2024 Advisor: Prof. Shaoping Wang
Advanced Robotics Centre, NUS Undergraduate Research Assistant (Remote) <ul style="list-style-type: none">Topic: 6-DOF grasp based on fundamental models	Jul 2023 – Dec 2023 Advisor: Dr. Wenshuo Wang

Industry Experience

Beijing Kaiyun Technology Co., Beijing <ul style="list-style-type: none">Designed scripted test programs with LUA on the Semi-Physical Simulation Test Software ETESTAccomplished semi-physical simulation on an embedded system lab box to design a smart clock with temperature and humidity sensing capabilities	Jul 2024 – Sep 2024
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Projects

Wheel-Legged Robot <ul style="list-style-type: none">Designed a control system based on the STM32H7 MCU, enabling basic robotic motions including forward/backward movement and in-place rotation.Implemented cascaded PID control loops to enhance servo motor positioning accuracy to within $\pm 0.5^\circ$.Developed an LQR-based state-feedback attitude controller that fuses IMU data for disturbance rejection and balance stability.Tools: STM32, MIT-driven Brushless Servo Motors; SolidWorks, LQR&PID Control	Demo
Zhixing Autonomous Car II <ul style="list-style-type: none">Deployed the Cartographer SLAM algorithm, achieving a map coverage rate exceeding 95%.Designed the URDF model of the vehicle and conducted dynamic simulations in IsaacSim and Gazebo.Generated real-time ESDF occupancy maps using Intel RealSense cameras and the NVBlox framework to facilitate real-time navigation.	Code

- Tools: NVIDIA Jetson, Intel RealSense; ROS 2 (IsaacROS), SolidWorks, IsaacSim

Zhixing Autonomous Car I

Demo

- Deployed the GMapping SLAM algorithm, accomplishing a map coverage rate greater than 87%.
- Implemented the Navigation stack for real-time path planning and dynamic obstacle avoidance, with an avoidance accuracy rate of 97%.
- Integrated the Baidu Speech Recognition SDK to enable voice-controlled navigation, achieving a recognition accuracy rate of >80%.
- Tools: Onboard LiDAR; ROS, OpenCV, Baidu Speech SDK

Treasure-Hunting Vehicle

Demo

- Developed a control system based on Arduino and ESP32 for command transmission and remote teleoperation.
- Utilized the OpenCV library for binarization and perspective correction of randomly generated track images, simultaneously generating precise coordinate distributions of track obstacles to assist navigation algorithms.
- Integrated PID control with the Dijkstra algorithm to achieve high-precision path tracking and dynamic obstacle avoidance. Attained sub-centimeter positional accuracy (<0.5 cm) and rapid attitude control response with minimal overshoot (<1%), ensuring stable, smooth, and accurate traversal along the planned path.
- Tools: Arduino, ESP32; OpenCV, Dijkstra Algorithm

Skills

Programing: C/C++ , Python, Pytorch, MATLAB

Robotics Software: ROS/ROS2, OpenCV, PCL, IsaacSim/Lab, Gazebo, Mujoco

Robotics Hardware: Solidworks, Fusion360, 3D Printing; Multisim; STM32, ESP32, Arduino, NVIDIA Jetson®

Language: TOEFL:101 (R:26 L:25 W:27 S:23), \LaTeX

Awards

The Undergraduate Training Program for Innovation and Entrepreneurship Funding (National level)	2024
Academic Excellence Award	2024
Academic Excellence Award	2023