Shukun Huang

2933151428@qq.com · (+86) 15024220891 · shockley6668 · my website

Education

Shenzhen Technology University 09/2022 – Present

Bachelor's Degree in Computer Science and Technology
GPA: 3.58/4.50 (Top 20%)

Personal Evaluation

1. My passion for robotics was ignited in high school through participation in competitions like VEX and RoboMaster Summer Camp. During university, I deepened my practical understanding and theoretical knowledge of core technologies such as robot control, embedded development, and deep learning through various hands-on projects and competitions.
2. As the leader of the RoboMaster team's electrical control group, I was responsible for the overall robot design and development, which greatly honed my teamwork and problem-solving skills.
3. I thrive in dynamic environments, bringing strong communication and teamwork skills, and a knack for quickly adapting to new technologies. My deep motivation in robotics fuels a constant drive for learning and innovation.

Honors and Awards

First Prize, National Undergraduate Electronic Design Contest, Guangdong Province
Third Prize, RoboMaster National University Robot Competition
First Prize, RoboMaster University League Competition Sentry Robot Group
First Prize, IEEE ICRA 2024 Agilex Sim2Real Challenge
Second Prize, IEEE ICRA 2025 Sim2Real Challenge
Second Prize, IEEE ICRA 2024 RoboMaster University Sim2Real Challenge
Second Prize, "Craftsman Star" Scholarship, Shenzhen Technology University
Second Prize, "Research and Innovation" Scholarship, Shenzhen Technology University

Professional Experience

Robotic Engineer at *Hitachi China Research Laboratory* 10/2025 – 11/2025

- Responsible for architecting and integrating the entire embedded ecosystem for Hitachi's autonomous elevator inspection robot, my role encompasses the full technology stack, from ground-up PCB design and low-level electrical system driver development to the high-level host computer software and the precision control algorithms for the robotic arm.

Robotic Application Engineer at *D-Robotics* 01/2025 – 7/2025

- Responsible for developing large model applications for Embodied-AI on the RDK edge computing platform (Horizon Sunrise chip), including model training, quantization, operator conversion and deployment of end-to-end VLA models like ACT and Diffusion Policy on the edge.
- Responsible for model conversion in the RDK Module Zoo S100 repository, including PaddleOCR, LaneNet, etc.

Robotic Engineer at *Shenzhen Innox* 01/2024 – 02/2024

- Developed and optimized ROS packages for DJI education robotic kits, covering from STM32 low-level drivers to robot navigation and localization.

Embedded Systems Teaching Assistant at *SZ DJI Technology Co., Ltd.* 06/2022 – 08/2022

- Planned and organized STEAM robotics summer camps for over 100 high school students.
- Developed ROS packages for controlling RoboMaster EP robots, implementing topic publishing and service functionalities.

- Implemented precise indoor localization for RoboMaster EP robots using AprilTag algorithm and TF transformations for real-time positioning.
- Developed path planning algorithms using Cubic Spline for flexible and precise motion control of RoboMaster EP robots.

Project Experience

NVIDIA Disney-style Bipedal Robot Replication 12/2025 – Present

Project Description:
Replicating and optimizing a bipedal robot platform inspired by NVIDIA's Disney robots, focusing on expressive locomotion and stable gait control.
Responsibilities:

- Architected the embedded software framework based on STM32 H7 series MCU and HAL library, implementing high-speed USB Virtual COM Port communication to ensure efficient data exchange between the robot and host computer.
- Designed and tuned Reward Functions for PPO reinforcement learning to enhance walking stability and enable multiple gait states.
- Conducted Sim2Real deployment on RDK X5, involving model quantization and compression to ensure real-time inference on edge hardware.
- Addressed the Sim2Real gap by optimizing domain randomization and system identification to achieve robust locomotion in real-world environments.

Achievements:
Successfully deployed the reinforcement learning policy on a physical bipedal robot.

Cathay Hackathon 2025 10/2025 – 11/2025

Project Description:
Designing and developing "Captain Milo", an AI-powered Companion for Unaccompanied Minors in flight.
Responsibilities:

- Designed product and system architecture, deploying an offline LLM on RDK X5 edge hardware integrated with IMU and biosensors for real-time emotion recognition.
- Engineered the end-to-end data flow connecting the edge device, Cloud Agent, Parent App, and Crew Dashboard to ensure safety transparency and seamless communication.
- Applied GenAI and cloud-computing methodologies learned from AWS, Google Cloud, and Microsoft masterclasses to strengthen the feasibility and scalability of solutions.

Achievements:
Led the team through the Initial Submission and First Pitch evaluations and ultimately reached the Final Stage (Top 38 out of 400–500 teams) as the only team from Mainland China

Dexterous Hand Control 09/2024 – 12/2024

Project Description:
Developing a Teleoperation control system for a dexterous hand to enhance operational flexibility and precision in complex environments.
Responsibilities:

- Responsible for forward/inverse kinematics calculations of finger joints.
- Applied optimization algorithms to map human hand joint movements to dexterous hand joints effectively.

Achievements:
Successfully achieved dexterous hand mimicking human hand movements in simulation and real environments.

STEM Education Robot Kit Development 08/2024 – 01/2026

Project Description:
Developing a Mecanum wheel car (Arduino, ESP32, RDK X3) for line following, AprilTag-based localization, and autonomous navigation.
Responsibilities:

- Selected and tested existing motors and sensors.

- Designed PCB for control board (motor driver, IMU, STM32).
- Implemented closed-loop control on STM32, sending speed commands to ESP32.
- Encapsulated ESP32 chassis kinematics and servo/stepper motor libraries.
- Used Blockly for graphical programming of functions.
- Utilized RDK X3 for AprilTag recognition, implementing precise indoor localization and navigation.

Achievements:
This robot kit, widely adopted in primary and secondary schools across the Greater Bay Area, not only fuels students' success in robotics competitions but has also proven its efficacy by successfully completing 95% of designated tasks, including autonomous navigation and object recognition.

3D LiDAR-based Semi-Autonomous Mobile Robot SLAM & Path Planning 05/2023 – 03/2024

Project Description:
Achieved robust SLAM and path planning capabilities for a semi-autonomous mobile robot, leveraging 3D LiDAR technology.
Responsibilities:

- Built navigation framework: PointLio for localization, Dijkstra for global planning, TEB for local planning.
- Developed a Gazebo simulation platform for algorithm debugging without a physical robot.
- Established serial communication between upper and lower MCUs with CRC, watchdog, ensuring stable ROS-embedded board communication.
- Used behavior trees and state machines for robot behavior planning and autonomous decision-making.
- Implemented PID for 2-DOF gimbal control with Kalman filtering for stable auto-aiming under external disturbances.

Achievements:
The robot from this project won first prize in the Sentry Robot Group at the RoboMaster University League.

Research Experience

Designing of a Dexterous Hand and Performance Evaluation Based on Teleoperation 06/2024 – 12/2024

First Author
Publication: EI Core Conference Paper (Accepted). Published at IRAC.