

Xuanyu Huang

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Designing bug or on the way to design bug

Education

2020–2024 **B.E. in Electronic Engineering**, *Nanjing University of Science and Technology*, Nanjing, China.

Professional Experience

Academic

June – Nov. 2023 **Undergraduate Researcher**, *CLEAR Lab (Prof. Wei Zhang)*, Southern University of Science and Technology.

- [A1] Developed a foot-end sensor module for use by both quadruped and biped robots, designed to detect contact and force. The module includes linear Hall sensors for measuring metal deformation, and IMU for optimizing state estimation.

2021 – 2023 **Captain & Project Management**, *Alliance Robotic Team*, Nanjing University of Science and Technology.

- [A2] Led a team of up to 50 people building and controlling seven different robots and participating in the RoboMaster University Championship. (More than 400 universities worldwide and 35000 students participated in this competition).
- [A3] Developed and open-sourced the *Alliance 2022 Standard Robot with Omni Wheel* that received widespread acclaim. In the RoboMaster 2023, one-third of the omni wheel robots are based on my design. [bbs]
- [A4] Developed an in-wheel gear reducer for my robot to improve motor efficiency in high rotational speed. It involves various aspects such as mechanical design, supply chain, and tolerance control.

Industry

2018 – 2019 **Mechanical Engineering Intern**, *DJI Technology Co., Ltd*, RoboMaster High-School Students vacation

- [N1] Developed a robot with a Mecanum wheel chassis, Z-axis lifting, and Roll-axis rotation degrees of freedom for a dual gripper actuator, used for transporting building blocks.
- [N2] Designed two coordinated robots: a transport robot with a two-degree-of-freedom arm and a recognition robot used to identify six faces of a cube.

2017-2019 **Individual Developer**, *High and Middle School*.

- [N3] Developed a quadcopter driven by a single motor. The transmission structure is implemented using gears and timing belts. The flight controller used open-source hardware and PID. [CSDN] [video]
- Made an LED-based lightsaber from the Star Wars universe.

Skills

Mechanic Design: Solidworks [A3, A4, N1, N2, N3, O3], Fusion 360 [A1], Fabrication: CNC and 3D print [A1, A3, A4, N1, N2, N3, O1, O3]

Embedded Hardware: KiCAD [A1, O1], EasyEDA [O2]; Software: STM32CubeMX, VSCode

Tools C, C++ [A1, N3, O1, O3], Python, Verilog [O3], ROS [A1, O1], Linux, L^AT_EX

Video Video shooting and editing(Davinci Resolve) [V1, V2]

Others Design Thinking [A4, E1], Leadership [A2, E2, E3, E4], Entrepreneurship [E1, E2, E3, E4]

Entrepreneurship

- Jan. 2023 – present **Founder, Ding LAB, Nanjing Fat Cat Robot Technology Co., LTD.**
- [E1] Selling injection-molded omni-directional wheels specifically designed for robotic teams. This project involves various aspects including polyurethane injection molding, tolerance control, cost control, and supply chain management. [Github]
- July – Sept 2020 **Founder & Editor, Black Horse Club.**
- [E2] Organized 50 high school graduates who ranked in the top 100 of their city in the college entrance examination, to compile, edit, print, and sell their notes. [Video]
 - [E3] Organized outstanding high school graduates to held a tutoring program for current students. Hardworking graduates have earned a substantial amount of additional income.
- Sept. 2018 – June 2019 **Founder & Captain, Maker Space, Chaozhou Jinshan High School.**
- [E4] Received school funding support and organized students to engage in technology activities, including quadcopters, 3D printing, chemistry experiments, biology experiments, and more. [Video]
 - Organized members to participate in technology competitions.

Awards and Honors

2021 – 2023	RoboMaster University Championship (more than 200 Chinese Teams)	Top 32
2021	Nanjing University of Science and Technology student scholarship	1st Class
2019	Guangdong Adolescents Science and Technology Innovation Contest	2nd Prize
2018 & 2019	RoboMater Summer & Winter Camp for High School Students	5th & 4th Place

Additional Info

Engineering Projects

- Apr. 2024 – present [O1] **A small quadruped robot** based on [CyberGear](#), cleardrive(Not yet open-source), [ecat_hw](#) and [legged_control](#). It weighs only 6.14 kg. (Ongoing) (Team project) [Github]
- Mar. – June 2023 [O2] Amplifying the strain gauges signal using operational amplifiers and controlling the timing of LED blinking with a timer. It is an analog electronics project without a microcontroller. [Github]
- 2022 – 2023 [O3] **A biped wheeled-legged robot** using VMC & LQR (open-source control method). (Team project) [Video]
- Oct. 2022 [O4] Developed a frequency counter and signal generator using FPGA. [Github]

Video Projects

- 2020 – 2021 **Director, Cameraman & Film Editor, Nanjing University of Science and Technology.**
- [V1] Independently filmed and produced the best documentary in the history of RMUL (RoboMaster University League). [Video]
 - [V2] Filmed a documentary for classmates of the same grade participating in the Campus Sports Meet. [Video]