

# Zhuohang Wu (John Wu)

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London

## ▼ Technical Expertise

Embedded Systems and Control, Robotics and AI, Internet of Things

## ▼ Education Background

**MSc** in Systems Engineering for the IoT, UCL, UK Sep, 2024 - Sep, 2025  
**BSc** in Automation (EEE), Northeastern University, China, **Twice** Scholarship Sep, 2021 - Aug, 2024

## ▼ Team Projects

Collaborative Control for a Quadrotor with a Robotic Arm Ongoing  
With MPPI whole-body control strategy, integrating dynamics for aerial manipulation tasks.

Thames River Coliform detection IoT AI system via inorganic sensors Ongoing  
Significantly faster and more cost-effective compared to traditional organic methods.

A multi-agent navigation system in simulation and real world. Dec 2024  
Optimized control strategies, addressed challenges in simulation-to-reality mapping.

Bachelor Project: Novel Electromechanical Switch Design and Application in Robotic Arms. Aug 2024  
Based on robotic kinematics. Won **Outstanding Graduation Project**. And **Publication1**.

Hand-hold Control Box for **SIASUN** Robotic Arm during Internship. Jun 2024  
Peripheral chips and devices driver development and debugging.

Wireless Controlled Omnidirectional Mobile Platform while Intern in **ISOM**. Jul 2022  
Closed-loop speed & position control, anti-slip acc & deceleration. Applied **Patent1**.

Electromagnetic Testing Device for Oil and Gas Pipelines. Apr 2021  
Designed embedded system including electromagnetic testing PCB and software.  
Won **Gold Award** in the "Internet+" Competition of Liaoning Province. Granted **Patent2**.

DJI RoboMaster International Robotics Competition, dominating the major Hero Robot. Jan 2021  
University: As team **leader** and won First Prize, 250% faster than the 2nd group.  
Northern China: As electronic control group **leader**, won **First Prize**. And **Publication2**.

## ▼ Internship Experience

**SIASUN** Robot & Automation Co., Ltd 15.Apr.2024 - 17.Aug.2024  
R&D of robotic arms control box, met control communication and UI display requirements.

Ansteel Group Corporation 03.Jul.2023 - 17.Jul.2023  
Visited and studied molten steel, steel coil, coating, seamless steel pipe production lines.

Supcon Technology Co., Ltd. 07.Jul.2022 - 11.Aug.2022  
Installed and debugged 2 sets of intelligent traffic terminals.

**ISOM** of China (Hangzhou) Co., Ltd. 02.Jun.2022 - 06.Jul.2022  
R&D of **AGV** robots, implementing the chassis control subsystem.

Senyuan Road & Bridge Co., Ltd., 01.Jul.2020 - 20.Jul.2020:  
Developed an adjustable DC backup supply. Granted **Patent3**.

Zhejiang Lab brain-inspired chip Dep:  
Studied Darwin chip which supports spiking neural networks.

Red Cross Society of China:  
Volunteered in five activities, 201 hours in total.

## ▼ Practical Skills

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### Embedded Systems

Proficient in ARM MCUs and **Keil**, including **STM32F1xx** and F4xx, Arduino, Ras-pi, ESP32.

Proficient in **USART, SPI, I2C, 8080, and CAN** protocols, register level debugging experience.

Skilled in adjust and design **PID** controllers in motor speed and position, **RTOS**.

Temperature and liquid level control, **Smith predictor** design and adjusting.

### Hardware Design

Circuit design with **Altium Designer**; PCB soldering and assembly; modelling with **Solidworks**

Based on datasheet to develop drivers and peripheral circuits.

Machine Learning: Random forest, PCA, CNN, Gaussian process, Bayesian Optimization, OpenCV, etc.

Programming Languages: C/C++, Python, MATLAB, JavaScript, HTML.

Language Proficiency: Native **Mandarin** speaker; **TOEFL**: 104/120, CET-4: 559/710, CET-6: 508/710.

## ▼ Personal Interest Projects

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### Fixed-Wing Flight Control System

**GPS**, OLED, wireless, gyro attitude estimation and stabilization, auto-return, waypoint navigation

### PLC-Based Vision Sorting System

A CV based robotic arm sorting system, controlled via PLC to sort and transport efficiently.

### Courtyard Solar Self-Sufficient Power System

Network camera, IoT, **MPPT**, DC-AC inverter, **SPWM**, Li-ion battery BMS.

### Smart Toilet System Design

**Smith** temperature control, multi-level menu design, multi-threaded design.

### Hardware signal generator

Pure hardware to generate sin, square, triangular, and sawtooth with adjustable freq and Vpp

STM32 Oscilloscope using **FFT**

## ▼ Other Achievements

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As **Leader**, won the National level Undergrad Innovation Training Program on "Design and

Development of Smart Video Surveillance Holographic Digital Twin System" in June 2022.

**Co-leader** of the Intelligent Car Lab in the TI Cup Competition in October 2022.

Represented Northeastern University in the **TI Cup National Competition** in August 2023.

## ▼ Patents and Publications

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**Publication1**: "Novel Electromechanical Switch Design and Application in Robotic Arms"

(Archived in University Library as Outstanding Graduation Project, First Author, 2024)

**Patent1**: Method to Correct Motor Speed Measurement Error First Inventor, Substantive Exam 2023)

**Publication2**: "Mechanical Design and Wheel-Leg-Body Cooperation Control of a Step-Climbing Robot" (*Journal of Field Robotics*, 2022)

**Patent2**: Magnetic Flux Leakage Detect Device with Switchable Excitation Direction (2021)

**Patent3**: Speed Measurement Device and Method for Vehicles (First Inventor, 2020)

## ▼ GitHub Link

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<https://github.com/Headmaster218?tab=repositories>