

Jiacheng Huang

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EDUCATION

Nanyang Technological University, School of Electrical and Electronic Engineering

Aug.2025 – Present

Master of Science in Electronics ➤ GPA: 4.25/5.0

Fuzhou University & National University of Ireland Maynooth (China-Ireland Cooperative Program)

Sep.2021 - Jun.2025

Bachelor of Engineering with First Class Honours in Electronic Engineering ➤ GPA: 3.66/4.0

- Scholarships: **Best Bachelor Thesis Award** (top 1/300), Innovation Scholarship, Second Prize Scholarship, Third Prize Scholarship (two times).

PUBLICATIONS

- [1] [Jiacheng Huang](#), Honglin Liao, Cunyi Yin, et al. "RoPEHAR: A Real-Time Rotary Position Encoding Informer for mmWave-Based Human Activity Recognition in Substations." *IEEE Internet of Things Journal*, 2026.
- [2] Hanlin Cai, Yucheng Fang, [Jiacheng Huang](#), et al. "Securing Billion Bluetooth Low Energy Devices Using Cyber-Physical Analysis and Deep Learning Techniques". *The ACM Conference on Knowledge Discovery and Data Mining (SIGKDD)*, 2024.
- [3] Honglin Liao, [Jiacheng Huang](#), Yong Tang. "LEET: Stock Market Forecast with Long-Term Emotional Change Enhanced Temporal Model". *PeerJ Computer Science*, 2024.
- [4] Hanlin Cai, Yuchen Fang, [Jiacheng Huang](#), et al. "Hybrid Detection Mechanism for Spoofing Attacks in Bluetooth Low Energy Networks". *The ACM International Conference on Mobile Systems, Applications, and Services (MobiSys)*, 2024.
- [5] [Jiacheng Huang](#). "Research and Design of Unicycle Robot Based on Cascade PID Control". *The International Conference on Mechatronic Engineering and Artificial Intelligence (MEAI)*, 2023.
- [6] [Jiacheng Huang](#), Honglin Liao, Shujuan Chen. "Research on Automatic Pricing and Replenishment Decision of Vegetable Commodities Based on Penalty Function LSTM Model". *The International Conference on Information Engineering, Electronics and Communication Technology (IEECT)*, 2023.

RESEARCH & PROJECTS

Radar Signal Processing for Through-the-Wall Human Activity Detection, Nanyang Technological University

Supervisor: Prof. Khong Wai Hoong, Andy, Delta-NTU Corporate Laboratory for Cyber-Physical Systems

Aug 2025 - Present

Outline:

- Developed AuraSense, a privacy-preserving mmWave radar-based system enabling contactless vital sign monitoring (heart rate, respiration, and blood pressure) and real-time human activity recognition, targeting eldercare and hospital.

Responsibilities:

- Designed and implemented deep learning algorithms for multi-task radar signal processing; developed the software interface for real-time visualization; contributed to system integration and live hardware deployment on TI IWR6843 platform.

Achievement:

- Selected into Singapore's National GRIP and NTU's Chua Thian Poh Pinnacle Prize; paper submitted to NeurIPS 2026.

Development of a Self-balancing Unicycle Robot Based on Visual Inspection, Fuzhou University

Supervisor: Prof. Wu Wang, National Student Research Training Program (SRTP)

Jun 2023 - Jun 2025

Outline:

- Developed a self-balancing dual-helix unicycle robot using a cascaded PID control algorithm, enabling autonomous stabilization on complex terrain and effective machine vision-based inspections in real-world industrial environments.

Responsibilities:

- Utilized Altium Designer for embedded circuit design supporting real-time PID control, conducted nonlinear dynamic modeling of the dual-helix mechanism, and developed Apriltag-based machine vision algorithms for precise robotic localization.

Achievement:

- Awarded National-level Undergraduate Innovation Project; published conference paper; registered software copyright.
- Also led a parallel Provincial SRTP project on underwater fish detection using YOLO, securing a research grant of \$3,500.

Application of Microcontrollers to the Design of Intelligent Bodies and Digital Manufacturing, Princeton University

Supervisor: Prof. Michael Littman, Princeton Engineering Summer Research Program

May 2023 - Jul 2023

Outline:

- Explored PD-controlled DC motor dynamics for precision motion control in 3D printing systems, investigating real-time thermal-electromechanical integration through microcontroller-based feedback architectures with stability margin optimization.

Responsibilities:

- Developed MEMS-based digital control circuits using Falstad and Tinkercad, implementing adaptive PD algorithms for mechanical automation feedback loops; validated models through hardware-in-loop simulations with Arduino microcontrollers.

Achievement:

- Developed validated mechatronic dynamic models; published conference paper; secured recommendation from Supervisor.

INTERNSHIP EXPERIENCES

Radar Algorithm Engineer, Fujian Emperor Vision Technology Co., Ltd., China

Feb 2024 - Jun 2024

Outline:

- Developed a contactless mmWave radar-based human sensing system for State Grid substation safety monitoring, using the IWR1843 evaluation board to detect worker posture under complex electromagnetic environments for accident prevention. The developed algorithms were later extended into the first-authored paper RoPEHAR, accepted by IEEE Internet of Things Journal.

Responsibilities:

- Conducted radar signal processing and deep learning model development, proposing a hybrid denoising pipeline combining SNR thresholding and DBSCAN clustering, and optimizing an Informer-based classification algorithm tailored for mmWave radar point clouds to achieve high-precision worker activity recognition in substation environments.

Embedded Software Engineer, Xiamen Fanshi Intelligent Technology Co., Ltd., China

Jun 2024 - Aug 2024

Outline:

- Developed a miniature UAV for industrial indoor inspection, integrating UWB positioning with Apriltag vision systems to achieve centimeter-level accuracy in GPS-denied environments while adapting to complex structural interference. The UAV prototype was successfully deployed in industrial site inspections, achieving reliable centimeter-level indoor localization.

Responsibilities:

- Performed signal validation for custom ESP32 controllers; developed Apriltag-based localization and Mavlink protocols; engineered embedded firmware for UAV control and Python-based inspection scheduling systems.

Embedded Engineer, Fuzhou Shuofeng Technology Co., Ltd., China

Jul 2023 - Aug 2023

Outline:

- Designed a remote control system integrating ESP32 communication boards with rapid door actuators, tackling limited automation in mining operations to enable automated control of safety-critical ventilation doors in mining environments. The system was integrated into a full mining ventilation pilot, demonstrating stable remote actuation in field trials.

Responsibilities:

- Engineered an ESP32-based remote control board using Altium Designer, developed customized MQTT clients for ventilation door communication protocols, and built monitoring software systems for real-time operational oversight.

AWARDS & HONOURS

Selected Venture, Chua Thian Poh Pinnacle Prize, NTU National Innovation & Entrepreneurship Competition	2026
Honorable Award in COMAP's Mathematical Contest in Modeling	2024
First Prize in Fujian Computer Software Design Competition	2023
Best Technical Innovation Award in Cross-Strait Information Service Innovation Competition	2023
International Bronze Award in International "Internet+" Innovation and Entrepreneurship Competition	2023
Second Prize in National Collegiate Internet of Things Technology and Application Competition	2023
Third Prize in Fujian Division, National Undergraduate Electronic Design Competition	2023