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: 4.10/5.0

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.
- **Radar Algorithm Engineer Intern**:
  Imperial Vision Technology Co., Ltd. Developed a mmWave radar system for substation safety monitoring, implementing signal denoising pipelines and deep learning models for real-time posture detection under electromagnetic interference.

Achievement:

- Selected into **Singapore's National GRIP**, a national-level initiative by the National Research Foundation (NRF) co-executed with NTU and NUS to translate deep-tech research into market-ready startups; 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

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

Mentor: Prof. Hao Jiang, Fuzhou University ***Jun 2023 – Feb 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.

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.

Achievement:

- Delivered fully functional drone prototype demonstrated at Fuzhou Software Park with autonomous inspection capabilities.

Research Intern, Fuzhou Shuofeng Technology Co., Ltd., China

Mentor: Prof. Binglei Li, Fuzhou University ***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.

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.

Achievement:

- Successfully integrated the system with existing automated ventilation doors; Patent application in preparation.

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