Siheng Ye

Electrical and Electronic Engineering | Robotics, Control and Intelligent Systems
Ningbo, China | Portfolio | LinkedIn | GitHub | ORCID

Education

University of Nottingham Ningbo China Expected July 2027
BEng (Hons), Electrical and Electronic Engineering | Final-year undergraduate
Research interests: Embedded perception, robotic systems and control, cyber-physical systems, and edge AI.
Selected final-year modules (2026/27, enrolled): Internet of Things (EEEE3124); Control Systems Design (EEEE3066); Robotics, Dynamics and Control (EEEE3076); Sensing Systems and Signal Processing (EEEE3110).

Final-Year Project

PMSM Model-Predictive Control with Digital-Delay Compensation
In progress | Supervised by Ahmed Nasr Abdelwahed
A simulation-based study of digital-delay compensation and prediction robustness in PMSM predictive torque control. Current results are exploratory; hardware validation remains future work.

Research Experience

Robot–Elevator Interaction June–August 2026
Lift Robot project | Supervised by David Chieng

- Designed the overall ROS 2 perception-to-action architecture on Jetson AGX Orin; led implementation and testing, including hand-eye calibration, RGB-D localisation, and operator-selected, guarded arm motion.
- The project reported 404/475 correct offline target selections (85.1%), separately from two staged physical button-activation demonstrations. Explored zero-shot detection with YOLO-World.

Raspberry Pi 5 Engineering Assistant June–August 2026
FoSE Undergraduate Research Practice | Supervised by Ian Pratt

- Led end-to-end implementation and manuscript writing for a four-bit Qwen3-1.7B assistant with course-material retrieval, calculation tools, and a web interface exposing answers, sources, and tool traces.
- Compared seven configurations on 96 EEE questions in an offline GPU-reference evaluation; tool-augmented RAG scored 0.777/1.000. Separate Pi 5 CPU-only, closed-book Base inference scored 0.498/1.000; both are mean rubric scores, not accuracy or web-prototype performance.

Bangbang V2: Inclusive Teleoperation Robot March–May 2026
Supervised by David Chieng; co-supervised by Luke Younghoon Chang

- Owned the team's vision component: facial and expression recognition using MediaPipe's 478-landmark front end, CNN/ONNX, and interpretable FACS/action-unit routes.
- Implemented and tested the live Pi 5 camera vision path; outputs remained advisory, with final decisions retained by the human operator. Co-authored the distinct perception (HRFEST Paper 230) and operator-assistance (IHCI Paper 99) studies. FURP 2026 poster (PDF).

Transformable Land–Air Robot June–August 2025
Supervised by Chiew-Foong Kwong; co-supervised by Fuhua Jia

- Contributed mechanical modifications, cross-modal motion control, and embedded debugging to a FURP 2025 team adaptation of Michael Rechtin's Transforming Quadcopter, combining ground travel and quadrotor flight.

Technical Service and Activities

Technical Assistant November 2026
AI + Design Thinking & Robothon 2026 | University of Nottingham Ningbo China

- Provide technical support for equipment setup, Raspberry Pi and sensor debugging, code troubleshooting, and on-site demonstrations.

Selected Engineering Projects

Closed-Loop Forward Converter March–May 2026

EEEE2074 Energy Project | Group 07

- Designed a 50 W two-switch forward converter and Type III compensation using the Venable K-factor method within Group 07; modelled parasitic circuit elements in PLECS.
- Wound transformer and inductor hardware, characterised magnetic components with an LCR meter, and investigated output regulation and switching-voltage spikes.

Doppler Radar Speed Detector October–November 2025

Embedded signal processing and digital logic project | Group 02

- Integrated HB100 radar, analogue conditioning, STM32U575 acquisition, CMSIS-DSP FFT processing, and a CPLD display within Group 02.
- Implemented UART reception and display logic in Verilog; investigated signal thresholds and communication timing with an oscilloscope.

Robotic Vehicle Design October 2024–March 2025

EEEE1039 Applied EEE Construction Project | Group 18

- Contributed PID line-following, OpenCV colour recognition, wireless communication, PWM motor control, and Arduino/Raspberry Pi integration within a four-person team.

Conference Papers

S. Ye, Z. Tong, S. Zhang and D. Chieng. "Robot–Elevator Interaction: From Physical Panel Recognition to Activation" (Paper 105). 2026.
Accepted for oral presentation, IHCI 2026.

S. Ye, X. Li, C. Qi, L. Yin, Y. Zhang and I. Pratt. "A Lightweight Test and Training Platform Utilizing a Raspberry Pi 5: AI-retrieval, Tools and a Compact LLM" (Paper 106). 2026.
Accepted for oral presentation, IHCI 2026.

Y. Chang, **S. Ye**, Y. Cao, et al. "Bangbang V2: On-Device Facial Emotion and Bilingual Speech Recognition for a Raspberry Pi-Based Tele-Operated Avatar Robot" (Paper 230). 2026.
Accepted for presentation, HRFEST 2026. Second author of nine.

Y. Chang, Y. Zhou, C. Liu, **S. Ye**, Y. Cao, H. Y. Khong, Y. Dai and D. Chieng. "Bangbang 2.0: Human-in-the-Loop Edge-Cloud LLM Decision Support for Inclusive Service Robots" (Paper 99). 2026.
Accepted for oral presentation, IHCI 2026. Fourth author of eight.

Technical Skills

Programming: Python, C++, Verilog; MATLAB/Simulink; Linux and SSH.

Robotics and embedded systems: ROS 2, Raspberry Pi, Jetson AGX Orin, STM32, Arduino, PID control, RGB-D localisation, and sensor integration.

Machine learning: OpenCV, MediaPipe, ONNX, RAG, supervised fine-tuning, GGUF/llama.cpp deployment, and comparative evaluation.

Electronics and tools: PLECS, LTspice, Multisim, Git, oscilloscopes, and LCR measurement.

Languages

Chinese: Native or bilingual proficiency.

English: Native or bilingual proficiency.

French: Professional working proficiency.

Japanese: Limited working proficiency.

Korean: Limited working proficiency.