JING YANG

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Education

- **European Institute of Innovation and Technology, digital** — European Union
  Joint Double-degrees Master Program - Embedded Systems; — *Sep. 2024 - Jun. 2026*

- **KTH Royal Institute of Technology** — Stockholm, Sweden
  Master of Science - Embedded Systems; — *Sep. 2025 - Jun. 2026*
  Courses: *Digital Design and Validation using HDLs, Embedded Hardware Design in ASIC and FPGA, ICT Innovation Study Project*

- **University of Bologna** — Bologna, Italy
  Master of Science - Computer Science and Engineering; — *Sep. 2024 - Jul. 2025*
  Courses: *Distributed Systems, Embedded Systems and IoT, Machine Learning, Intelligent Systems Engineering*

- **Southeast University** — Nanjing, China
  Bachelor of Engineering - Information Engineering; — *Sep. 2020 - Jun. 2024*
  Courses: *Digital Communications, Digital signal Processing, Microcomputer Systems and Interfaces, Digital Circuit and Systems*

Research Interests

Cyber-Physical Systems; Embedded and Edge AI; Embedded System and IoT; Acoustic Sensing; Visible Light Positioning; Wireless Communication

Skills

- **Coding**: Python, C, C++, Matlab, Verilog, JavaHTML, Kotlin, JavaScript, LaTeX
- **Hardware Skills**: Vehicular Systems, Hardware testing, Circuit design, Verification, PCB layout, AI Deployment
- **Platforms**: Linux, Windows, Arduino, Raspberry, STM32, ESP32, Xilinx, FreeRTOS, FPGA
- **Languages**: Mandarin(Native); English(C1, IELTS 7.0, GRE 323), Italian(A1), Swedish(A1)

Professional Experience

- **Li Auto** — Beijing, China
  Embedded Vehicular Systems Intern, R&D — *Jun. 2025 - Sep. 2025*
  - **Embedded System Development**: Conducted multi-version testing of XCU-A and ADNOA controllers based on S32G274 SoC with AUTOSAR and Linux OS, covering bootloader behavior, power domain transitions, and sleep/wake-up mechanisms.
  - **Communication Verification**: Assisted BSP-level debugging of GPIO, communication interfaces(CAN/LIN/Ethernet), and signal routing across ignition states (KL15/KL30), identifying timing issues and stability bugs.
  - **Firmware Management**: Contributed to OTA/FOTA validation including firmware version management, rollback strategy, and multi-domain coordination; improved test efficiency by 35 via Python automation scripts.

- **Tesla, Inc.** — Shanghai, China
  Electrical test Intern(HV Battery), R&D — *Mar. 2024 - Sep. 2024*
  - **Product Validation**: High-voltage battery module and pack-level reliability test and validation, including vibration test, impact test, thermal test, environmental test like HTHE and PTCE.
  - **Test Development**: Development of automated testing and data analysis using Python. Responsible for designing an autonomous control system with GUI for the Drop Rig bench.
  - **Result Analysis**: Developed an app for vibration data analysis based on Matlab and designed an internal website for recording experimental data and reliability analysis.

- **NIO** — Shanghai, China
  Power Engineer Intern, R&D — *Oct. 2023 - Feb. 2024*
  - **Low voltage power management**: Participated in the development of low-voltage power management systems for electric vehicles, focusing on the integration and optimization of power distribution components.
  - **Automated Testing**: Conducted testing and validation modules, developed automation testing software and platform by Python to enhance accuracy and efficiency.
  - **ECU fuction Validation**: Responsible for Efuse function test and calibration test on latest NT3 car.

- **Chengdu Zhimingda Electronics Co., Ltd.** — Chengdu, China
  Embedded Firmware Engineer Intern, R&D — *Jul. 2023 - Sep. 2024*
  - **SPI Driver Development**: Designed SPI driver module using Verilog; optimized data exchange with FIFOs.
  - **Advanced Data Transmission**: Developed AD7656 transmission modules; employed time-division and multiplexing.

Research Experience

- **Human Detection based on Acoustic Sensing and Mobile AI** — Remote
  The University of Texas at Dallas, HCCPS Lab — *Feb.2025 - Current*
  - **Acoustic Sensing**: Conducting research on acoustic signal-based human occupancy detection for smart homes. Designing a system that uses minimal hardware (one speaker and one microphone per room) to determine if a room is occupied by analyzing acoustic echoes and disturbances.
  - **Mobile AI and LLM Chain-of-Thought**: Experimenting with edge AI algorithms for real-time signal processing in a CPS context. Exploring integration of Large Language Models (LLMs) to enhance context-aware analysis of acoustic sensing data and improve detection accuracy.
- **Wireless Optical Positioning Technology based on Photodiodes** — Nanjing, China
  Southeast University, National Mobile Communications Research Labotary — *Feb.2022 - Jun.2024*
  - **Model Simplification**: Proposed a coordinate transformation framework simplifying 3D light-based localization into a 2D model, enabling lower-complexity real-time AoA-based positioning.
  - **System Architecture Design**: Contributed to the design of the real-time signal decoding pipeline on the receiver side, including frame synchronization, ID decoding, amplitude sampling, and rotational angle estimation across dual-core architecture.
  - **Hardware Prototyping**: Designed and prototyped a photodiode-array sensing module with microcontroller integration for angular estimation; independently built an adjustable light/rotation testbed to validate signal response. Developed methods to build up LED database automatically.

Projects

- **Autonomous Racing USV - Obstacle-Aware High-Speed Boat (IEEE Maritime 2025 Ro-boat Race)**: Led the end-to-end development of a high-speed unmanned surface vehicle capable of autonomous racing with real-time obstacle avoidance and collision prevention. Integrated ArduPilot Rover firmware with Pixhawk 2.4.8/CUAV autopilots for low-level control, while a Raspberry Pi companion computer ran Python algorithms for path planning and MQTT-based obstacle detection. Validated the full stack in SITL before field deployment. Final Winner of IEEE Maritime Aegean Ro-Boat Race. Tech: C++, Python, ArduPilot, MAVLink, MQTT, PID control, Embedded Linux. (2025)
- **STRIPS-based Multi-Drone Delivery in a Horn-Shaped Map**: Solely designed and implemented an intelligent planning platform that models heterogeneous drones, energy budgets, and urban topology in a horn-shaped map. Formalized actions in STRIPS and built a Kotlin + tuProlog reasoning engine that generates energy-aware, collision-free task allocations in real time, with automatic re-planning under dynamic constraints. Delivered a JavaFX GUI for interactive simulation, plan visualisation and performance analytics; integrated 40+ JUnit/Kotlin tests for coverage and CI. Tech: Kotlin, Prolog, STRIPS, Java, Gradle. (2025)
- **CPU Design Using Vivado (Digital System Course Design)**: Constructed a 32-bit CPU. Programmed instruction set and internal registers in Verilog, implemented arithmetic operations on Xilinx board. Tech: Verilog, Digital IC disgn. (2024)
- **Research on the Sweeping Robot based on Optical Positioning Technology (Chinese National Training Program of Innovation)**: Created new optical positioning modules and PCBs to apply, developed an open-source robot for autonomous navigation based on positioning method. Tech: Matlab, Arduino, Analog IC design, PCB layout. (2023)
- **Multi-Directional Planar Robot with Edge AI Voice Control (National IoT Contest)**: Designed a robot with intelligent voice control using Espressif ESP32 Kit, applied the built-in Rainmaker Cloud. Won provincial and national awards. Tech: C++, ESP32, TensorFlow, IoT. (2022)

Publications

[**C.1**] **Jing Yang**, et al. (2023). **An Efficient Visible Light Positioning and Rotation Estimation System Using Two LEDs and a Photodiode Array**. In *2023 IEEE Wireless Communications and Networking Conference (WCNC)*. 2023.5.12, Glasgow, United Kingdom. DOI: 10.1109/WCNC55385.2023.10118745

[**P.1**] Bingcheng Zhu, **Jing Yang**, et al. (2023). **Receiver positioning and rotation angle estimation system based on photodiode and LED**. Patent CN115902946A. Publication Date: 2023.4.4.