JIALE CHU

He/Him/His · ✉ cometia@umich.edu

EDUCATION

University of Michigan - Ann Arbor, Michigan, US — Aug 2024 – Expected May 2026

Dual B.S. Degree Program with SJTU, *B.S.* in Robotics
Minor in Math and Electrical Engineering
GPA 4.00/4.00 (Dean's List)
Selected coursework: Robot Operation System, Multi-Robot Systems, Parallel Computer Architecture, Mobile Robotics: Methods and Algorithms

Shanghai Jiao Tong University, Shanghai, China — Aug 2022 – Expected Aug 2026

B.S. in Electrical and Computer Engineering
GPA 3.44/4.00
Selected coursework: Digital Communication, High-frequency Circuit, Electronic Circuit, Data Structure and Algorithms

RESEARCH INTERESTS

Magnetic Actuation and Control for Miniature Medical Robots

PUBLICATION AND MANUSCRIPTS

Kim, K., Katona, J., **Chu, J.**, Xiao, B., Naik, R., & Dong, X. . Wireless capsule device for targeted and safe tissue biopsy with integrated sensing. *(under review)*

RESEARCH EXPERIENCE

My research interest involves designing and fabricating multi-modal fusion sensing systems by possible integrating custom hardware, signal processing, communication, analysis pipelines, which applied in intelligent and interactive robotic or health monitoring system.

Vanderbilt University — Nashville, TN

Summer Research Assistant, Miniature Robotics Laboratory — May. 2025 – Aug. 2025

- Engineered a magnetic actuation and tracking system. The actuator system includes a Franka Emika robotic arm and builds high-level impedance control through ROS2. The tracking system consists of a 6-DOF wireless tracking a capsule robot, achieving position accuracy of 2.48 mm and orientation accuracy of 7.61 degrees.
- Developed a micro-scale camera integrated PCB board for the capsule robot, using ESP32 MCU to enable real-time, wireless capture from capsule camera.

Shanghai Jiao Tong University — Shanghai. China

Research Assistant, Laboratory of Ultrafast Integrated Systems — Jan. 2024 – May. 2024

- Designed and fabricated a PCB for a wideband PLL based RF signal source, achieving a frequency range of 2.4-2.8 GHz with a 70dBc phase noise for high-resolution sensing applications.

Research Assistant, Laboratory of Ultrafast Integrated Systems — Aug. 2023 – Dec. 2023

- Developed a signal processing pipeline using Variational Mode Decomposition (VMD) and Hilbert-Huang Transform (HHT) in MATLAB to extract respiration signals from noisy FMCW radar data.
- Fused radar data with a YOLOv4-based human detection vision system, enabling targeted life sign monitoring and improving system robustness in multi-person scenarios.

Teaching and Mentoring Experience

Shanghai Jiao Tong University Shanghai. China

Teaching Assistant on *VE311 Electronic Circuit* May. 2024 – Aug. 2024

- Independently led monthly recitation classes and provided office hours for more than 100 students.
- Individually lead two lab sessions, assist student groups in completing electronic circuit experiments.
- Co-authored revisions with the professor for the homework and lab manual and to organize course content to a textbook.
- Awarded **Advanced Teaching Assistant Certificate** from Joint Institute Center for Learning and Teaching.

SELECTED PROJECTS

RoboMaster 2023 Mech Master Competition Shanghai, China

Team member of *Electronics Control Group* of *Shanghai Jiao Tong University* Oct. 2022 – Aug. 2023

- Developed a high-level CAN bus communication protocol for driving different motors, enabling real-time data exchange between the controller and 7 motor drivers.
- Independently developed communication protocol using UART to transmit the robot poses and actions, and recieve and processing the command from host computers.

INDUSTRIAL EXPERIENCE

Internship on SinoFlow Shanghai, China

Researcher Engineer Intern Apr. 2024 – Aug. 2024

- Conducted literature reviews on chip-scale thermal analysis and developed a simplified thermal model based on the Partial Element Equivalent Circuit (PEEC) method.
- Implemented the simulation algorithm in C#, creating a standalone tool that was subsequently integrated as a plugin into Ansys software.

SKILLS

- **Programming**: C/C++, Python, C#, MATLAB, Git
- **Hardware & Design**: PCB Design (Altium Designer), CAD (SolidWorks), Embedded Systems (STM32, ESP32, Arduino)
- **Frameworks & Tools**: ROS, CMake, TinyML

HONORS AND AWARDS

University of Michigan - Ann Arbor | S&S Fund for International Students Award (2025)
ICPC East Central NA | Ranking 13/87 (2024)
UM-SJTU Joint Institute | Advanced Teaching Assistant Certificate (2024)
RoboMaster University Championship | National Champion Team Member (2023)
UM-SJTU Joint Institute | Student Development Scholarship (2023)
Mathematical Contest in Modeling | Honorable Mention (2023)