Junjian Chi

chijunjian@gmail.com | LinkedIn | GitHub | Google Scholar | Chi's Website

Education

University of Cambridge 2025 – 2026
MRes in Sensor Technologies and Applications *Cambridge, UK*

University College London 2022 – 2025
BEng in Electrical and Electronic Engineering, First-Class Honours *London, UK*

Publications

[1] J. Chi, Z. Zhang, Q. Zhang, A. Demosthenous, and Y. Wu, "Multimodal Smart Insole with Crossbar Crosstalk Compensation for Fall-Risk Prediction," Accepted by IEEE Int. Symp. Circuits and Systems. (ISCAS 2026, Poster)

[2] J. Chi, Q. Zhang, Z. Zhang, A. Demosthenous, and Y. Wu, "High-Resolution Plantar Pressure Insole System for Enhanced Lower Body Biomechanical Analysis," Published to IEEE Int. Symp. Circuits Syst. (ISCAS 2025, Lecture)

[3] J. Chi, Q. Zhang, Z. Zhang, A. Demosthenous, and Y. Wu, "Live Demonstration: A High-Resolution Plantar Insole System for Lower Body Estimation," Published to IEEE Int. Symp. Circuits Syst. (ISCAS 2025, Poster)

[4] J. Chi, S. Sivasubramani, J. Ghosh, V. Georgiev, R. Shafik, and T. Prodromakis, "Machine Learning for Skyrmion Dynamics under Multi-physics Coupling," Published to UK AI Research Symposium. (UKAIRS 2025, Poster)

Research & Industry Experience

Google DeepMind Research Ready Internship Jun. 2025 – Jul. 2025
Project: Integrating Multi-Physics Modelling and Machine Learning in Spintronics *University of Edinburgh, UK*
- Sweep micromagnetic simulations of skyrmion dynamics on COMSOL for 10K+ dataset generation.
- Perform feature engineering and fine-tune optimum classifier models for dynamic behavior analysis.

Rosetrees Funded Research Assistant Oct. 2024 – Jul. 2025
Project: Multimodal Insole System for Lower-body Clinical Enhancement *University College London, UK*
- Fabricate an insole-shaped flexible PCB with 253 velostat resistive pressure sensors and inertial motion unit.
- Design a multimodal 3D CNN + Transformer to predict joint positions and probability of falling at 91% accuracy.

Qualcomm Funded Summer Internship Aug. 2024 – Sep. 2024
Project: Circuit and System for Biomedical Applications, Robotics and HMI *University College London, UK*
- Design a 4-layer PCB of customized analogue front end for sensor linearity compensation with ESP32-wroom chip.
- Utilize FreeRTOS for ADC DMA readout and Wi-Fi AP transmission, build test platform for insole SoC.

UROP Research Assistant Jun. 2024 – Aug. 2024
Project: Wearable Multimodal EMG/Ultrasound Sleeve for Prosthetic Control *Imperial College London, UK*
- Model and fabricate a wearable flexible silicon armband for EMG and ultrasound sensors placement.
- Develop embedded system to collect and filter EMG signals from 16-channel electrodes.

Projects & Competitions

IEEE CASS Student Design Competition | *Team Leader* Dec. 2023 – Mar. 2024
- Low-cost ingestible biosensor-pill for colon-targeted drug delivery, awarded **1st Place** in UK & Ireland Chapter.

Single-Cycle RISC-V CPU Design | *Undergrad Coursework* Feb. 2025
- Implemented a 32-bit Single-Cycle RISC-V CPU and verified functionality with testbenches using System Verilog.

FPGA Audio Descrambler | *Undergrad Coursework* Mar. 2024
- Configured PLLs for clock synchronization and applied bandstop filtering/frequency mixing for signal descrambling in Quartus.

Technical Skills

Languages: Python, C, C++, System Verilog, MATLAB
Software: Git, Linux, FreeRTOS, Quartus, Altium Designer, COMSOL, Unity, Fusion 360, Blender
Hardware: PCB Layout Design, Embedded Systems (ESP32, STM32, Jetson), FPGA, 3D Printing, Soldering