

Junjian Chi

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EDUCATION

University of Cambridge <i>MRes in Sensor Technologies and Applications</i>	2025 – 2026 Cambridge, UK
University College London <i>BEng in Electrical and Electronic Engineering, First-Class Honours</i>	2022 – 2025 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 <i>Project: Integrating Multi-Physics Modelling and Machine Learning in Spintronics</i>	Jun. 2025 – Jul. 2025 University of Edinburgh, UK
– Generated 10k+ samples by sweeping skyrmion parameters in COMSOL across designed nanotrack geometries.	
– Constructed a GCN by encoding micromagnetic vectors as node features to predict binary collision outcomes.	
Rosetrees Funded Research Assistant <i>Project: Multimodal Insole System for Lower-body Pose Estimation</i>	Oct. 2024 – Jul. 2025 University College London, UK
– Reconstructed physically plausible SMPL parameters with differentiable optimization to suppress MediaPipe noise.	
– Designed a CNN + Transformer to regress SMPL parameters and recover 3D body mesh from plantar pressure.	
Qualcomm Funded Summer Internship <i>Project: Insole Hardware System for Biomechanical Clinical Enhancement</i>	Aug. 2024 – Sep. 2024 University College London, UK
– Designed an insole-shaped flexible PCB with 253 sensors and analogue front end for sensor linearity compensation.	
– Utilize FreeRTOS on ESP32 for ADC DMA readout and Wi-Fi AP transmission, build test platform for insole SoC.	
UROP Research Assistant <i>Project: Wearable Multimodal EMG/Ultrasound Sleeve for Prosthetic Control</i>	Jun. 2024 – Aug. 2024 Imperial College London, UK
– Modeled and fabricated a wearable flexible silicon armband for EMG and ultrasound sensors placement.	
– Developed embedded system to collect and filter EMG signals from 16-channel electrodes.	

PROJECTS & COMPETITIONS

IEEE CASS Student Design Competition <i>Team Leader</i>	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 <i>Undergrad Coursework</i>	Feb. 2025
– Implemented a 32-bit Single-Cycle RISC-V CPU and verified functionality with testbenches using System Verilog.	
FPGA Audio Descrambler <i>Undergrad Coursework</i>	Mar. 2024
– Configured PLLs for clock synchronization and applied bandstop filtering/frequency mixing for signal descrambling in Quartus.	

TECHNICAL SKILLS

Languages: Python, Pytorch, 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