

# Junjian Chi

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## EDUCATION

<b>University of Cambridge</b> <i>MRes in Sensor Technologies and Applications</i>	2025 – 2026 Cambridge, UK
<b>University College London</b> <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

<b>Google DeepMind Research Ready Internship</b> <i>Project: Integrating Multi-Physics Modelling and Machine Learning in Spintronics</i> <ul style="list-style-type: none"><li>– Generated 10k+ samples by sweeping skyrmion parameters in COMSOL across designed nanotrack geometries.</li><li>– Constructed a GCN by encoding micromagnetic vectors as node features to predict binary collision outcomes.</li></ul>	Jun. 2025 – Jul. 2025 University of Edinburgh, UK
<b>Rosetrees Funded Research Assistant</b> <i>Project: Multimodal Insole System for Lower-body Pose Estimation</i> <ul style="list-style-type: none"><li>– Reconstructed physically plausible SMPL parameters with differentiable optimization to suppress MediaPipe noise.</li><li>– Designed a CNN + Transformer to regress SMPL parameters and recover 3D body mesh from plantar pressure.</li></ul>	Oct. 2024 – Jul. 2025 University College London, UK
<b>Qualcomm Funded Summer Internship</b> <i>Project: Insole Hardware System for Biomechanical Clinical Enhancement</i> <ul style="list-style-type: none"><li>– Designed an insole-shaped flexible PCB with 253 sensors and analogue front end for sensor linearity compensation.</li><li>– Utilized FreeRTOS on ESP32 for ADC DMA readout and Wi-Fi AP transmission, built test platform for insole SoC.</li></ul>	Aug. 2024 – Sep. 2024 University College London, UK
<b>UROP Research Assistant</b> <i>Project: Wearable Multimodal EMG/Ultrasound Sleeve for Prosthetic Control</i> <ul style="list-style-type: none"><li>– Modeled and fabricated a wearable flexible silicon armband for EMG and ultrasound sensors placement.</li><li>– Developed embedded system to collect and filter EMG signals from 16-channel electrodes.</li></ul>	Jun. 2024 – Aug. 2024 Imperial College London, UK

## PROJECTS & COMPETITIONS

<b>IEEE CASS Student Design Competition</b>   <i>Team Leader</i> <ul style="list-style-type: none"><li>– Low-cost ingestible biosensor-pill for colon-targeted drug delivery, awarded <b>1st Place</b> in UK &amp; Ireland Chapter.</li></ul>	Dec. 2023 – Mar. 2024
<b>Single-Cycle RISC-V CPU Design</b>   <i>Undergrad Coursework</i> <ul style="list-style-type: none"><li>– Implemented a 32-bit Single-Cycle RISC-V CPU and verified functionality with testbenches using System Verilog.</li></ul>	Feb. 2025
<b>FPGA Audio Descrambler</b>   <i>Undergrad Coursework</i> <ul style="list-style-type: none"><li>– Configured PLLs for clock synchronization and applied bandstop filtering/frequency mixing for signal descrambling in Quartus.</li></ul>	Mar. 2024

## 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