

Chenchen Ding 丁辰辰

Ph.D. Candidate, Department of Electrical and Electronic Engineering
The University of Hong Kong

dingcc@connect.hku.hk · me.danieldcc.cc · Google Scholar · github.com/Dchenc12

RESEARCH INTERESTS

Memristor-based computing-in-memory architecture design · Digital circuit design · DNN accelerator architecture · Analogue computing on imperfect memristive devices · Tensor compression and neural architecture search for edge deployment.

EDUCATION

The University of Hong Kong (HKU), Hong Kong SAR

Sep. 2023 — present

Ph.D. Candidate, Department of Electrical and Electronic Engineering

Supervisors: Prof. Ngai Wong, Prof. Hao Yu

Southern University of Science and Technology (SUSTech), Shenzhen, China

Sep. 2019 — Jun. 2023

B.Eng. in Microelectronics, School of Microelectronics

RESEARCH EXPERIENCE

Next Generation AI Lab, The University of Hong Kong

Sep. 2023 — present

Memristor-based computing-in-memory architecture design; digital circuit design

High Performance Integrated Circuit Design Lab, SUSTech

Sep. 2021 — Jun. 2023

Software–hardware co-design for DNN accelerators; efficient neural architecture search; network optimisation via tensor decomposition, quantisation and pruning

PUBLICATIONS

* denotes equal contribution. Author name in bold.

Journal Articles

- [J6] **C. Ding**, Z. Liu, Y. Zhang, C. Li, J. Tang, B. Gao, H. Yu, H. Wu, N. Wong. *Memristive Singular Value Decomposition*. *Nature Communications*, 17, 8006, 2026.
- [J5] Z. Liu, Z. Wang, **C. Ding**, B. Lin, J. Tang, B. Gao, N. Wong, H. Wu. *Privacy-Preserving Data Analysis Using a Memristor Chip with Colocated Authentication and Processing*. *Science Advances*, 12(6), eady5485, 2026.
- [J4] T. Wu*, **C. Ding***, W. Zhou*, Y. Cheng, X. Feng, S. Wang, W. Xu, C. Shi, Z. Liu, N. Wong. *Hardware-Aware Low-Rank Adaptation for Large Language Models Based on Hybrid Compute-in-Memory Architecture*. *ACM Transactions on Design Automation of Electronic Systems (TODAES)*, 2026.
- [J3] B. Li, B. Jiang, Z. Ai, **C. Ding**, W. Shi, B. Huang, J. Liu, Z. Tu, G. Wang, H. Yu, et al. *EdgeLUT: Ultra-Efficient Configurable LUT-Based Edge Accelerator for Fixed-Resolution Image Restoration*. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, 2026.
- [J2] **C. Ding**, Y. Ren, Z. Liu, N. Wong. *Transforming Memristor Noises into Computational Innovations*. *Communications Materials*, 6(1), 149, 2025.
- [J1] M. Huang, J. Luo, **C. Ding**, Z. Wei, S. Huang, H. Yu. *An Integer-Only and Group-Vector Systolic Accelerator for Efficiently Mapping Vision Transformer on Edge*. *IEEE Transactions on Circuits and Systems I: Regular Papers (TCAS-I)*, 70(12), 5289–5301, 2023.

Conference Papers

- [C13] B. Li*, **C. Ding***, Z. Ai, W. Shi, B. Jiang, W. Zhou, B. Huang, J. Ren, H. Yu, N. Wong. *ScaleLUT: A Fully-Parallel Configurable LUT-Based Accelerator for Real-Time Multi-Scale Super-Resolution*. Asia and South Pacific Design Automation Conference (ASP-DAC), 2027. to appear

- [C12] **C. Ding**, H. Liu, Y. Li, H. Xiao, Z. Xu, P. He, Z. Yang, H. Hong, T. Wu, W. Zhou, Z. Feng, C. Li, L. Lin, J. Tang, B. Gao, Z. Liu, H. Yu, H. Wu, N. Wong. *First Demonstration of 28-nm Symmetric 2T1R RRAM Macro Suppressing Forward-Transpose Mismatch for AI Training and Iterative Solving*. IEEE International Electron Devices Meeting (IEDM), 31.3, 2026. [to appear](#)
- [C11] T. Wu*, Y. Cheng*, **C. Ding***, R. Yang, X. Feng, W. Zhou, Z. Liu, N. Wong. *Can We Trust LLMs on Memristors? Diving into Reasoning Ability under Non-Ideality*. Conference on Language Modeling (COLM), 2026.
- [C10] Z. Ai, B. Li, S. Yang, W. Shi, W. Zhou, B. Huang, **C. Ding**, N. Wong. *Hybrid-LUT: Channel-Aware Hybrid Lookup Table and Filtering for Efficient Image Denoising*. European Conference on Computer Vision (ECCV), 383–401, 2026.
- [C9] Y. Cheng, B. Huang, T. Wu, W. Zhou, **C. Ding**, Z. Liu, G. Chesi, N. Wong. *Perspective-Aware 3D Gaussian Inpainting with Multi-View Consistency*. IEEE/CVF International Conference on Computer Vision (ICCV), 28503–28513, 2025.
- [C8] S. Wang, Z. Liu, **C. Ding**, C. Zhang, T. Wu, J. Zhou, N. Wong. *NoiseZO: RRAM Noise-Driven Zeroth-Order Optimization for Efficient Forward-Only Training*. ACM/IEEE Design Automation Conference (DAC), 1–7, 2025.
- [C7] W. Zhou, Z. Liu, T. Wu, **C. Ding**, Y. Ren, N. Wong. *Towards Robust RRAM-Based Vision Transformer Models with Noise-Aware Knowledge Distillation*. Design, Automation and Test in Europe Conference (DATE), 1–2, 2025.
- [C6] W. Zhou, Y. Ren, J. Zhou, **C. Ding**, Z. Liu, N. Wong. *RRAM-Based Isotropic CNNs with High Robustness and Resource Utilization Rate*. IEEE Electron Devices Technology & Manufacturing Conference (EDTM), 1–3, 2025.
- [C5] H. Zhou, Z. Wei, D. Liu, L. Zhang, **C. Ding**, J. Yang, W. Mao, H. Yu. *A Layer-Wised Mixed-Precision CIM Accelerator with Bit-Level Sparsity-Aware ADCs for NAS-Optimized CNNs*. Asia and South Pacific Design Automation Conference (ASP-DAC), 2025.
- [C4] S. Yang, **C. Ding**, M. Huang, K. Li, C. Li, Z. Wei, S. Huang, J. Dong, L. Zhang, et al. *LAMPS: A Layer-Wised Mixed-Precision-and-Sparsity Accelerator for NAS-Optimized CNNs on FPGA*. IEEE International Symposium on Field-Programmable Custom Computing Machines (FCCM), 2024.
- [C3] K. Li, H. Huang, M. Huang, **C. Ding**, L. Lin, L. Ni, H. Yu. *A 29.12 TOPS/W and 1.13 TOPS/mm² NAS-Optimized Mixed-Precision DNN Accelerator with Vector Split-and-Combination Systolic in 28nm CMOS*. IEEE Custom Integrated Circuits Conference (CICC), 1–2, 2024.
- [C2] Z. Wei, T. Wang, **C. Ding**, B. Wang, Z. Guan, H. Huang, H. Yu. *FMTT: Fused Multi-Head Transformer with Tensor-Compression for 3D Point Clouds Detection on Edge Devices*. Design, Automation and Test in Europe Conference (DATE), 1–6, 2024.
- [C1] **C. Ding**, H. Ren, Z. Guo, M. Bi, C. Man, T. Wang, S. Li, S. Luo, R. Zhang, H. Yu. *TT-LCD: Tensorized-Transformer Based Loop Closure Detection for Robotic Visual SLAM on Edge*. International Conference on Advanced Robotics and Mechatronics (ICARM), 2023.

Earlier conference work: RankSearch (DATE 2023), TLCD (ICARM 2022), EMBC 2021, and ATFVO (WRC SARA 2021, Student Best Paper Award co-winner).

Workshop Papers

- [W1] C. Zhang*, Y. Cheng*, **C. Ding***, S. Wang, J. Lei, R. Yu, Y.-C. Wu, N. Wong. *Model Evolution Under Zeroth-Order Optimization: A Neural Tangent Kernel Perspective*. ICLR Workshop on Scientific Methods for Understanding Deep Learning (SciForDL), 2026.

Preprints

- [P2] Q. Yang, R. Yang, H. Xiao, W. Xu, J. Chen, H. Liu, **C. Ding**, R. Hu, Y.-C. Wu, et al. *FluxBin: Flexible LUT-Based Ultra-Low-Bit LLM Inference by Algorithm-Kernel Synergy*. arXiv:2608.15602, 2026.
- [P1] J. Xiong, Q. Han, **C. Ding**, H. Xiao, Z. Su, C. Tao, N. Wong. *CktFormalizer: Autoformalization of Natural Language into Circuit Representations*. arXiv:2605.07782, 2026.

Patents

- [T2] **C. Ding**, et al. *A Fall Detection Method, System and Terminal Based on DVS Data*. Chinese Patent CN113660455B, 2023.
- [T1] **C. Ding**, et al. *A Neural Network Compilation Method for RISC-V Devices Based on TVM*. Chinese Patent CN113626035B, 2022.

SERVICE

Reviewer, *Communications Engineering*

Reviewer, *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*

HONOURS & SCHOLARSHIPS

Outstanding Graduate of SUSTech	<i>Jun. 2023</i>
Outstanding Graduation Bachelor Thesis of SUSTech	<i>Jun. 2023</i>
Nomination Award, University Motto Scholarship (top 1% in SUSTech)	<i>Oct. 2022</i>
First Prize, Merit Student Scholarship (top 5% in SUSTech)	<i>Oct. 2022</i>
Merit Student Scholarship, Shenzhen Longsys Electronics (top 2.5% in SME)	<i>Dec. 2021</i>
Merit Student Scholarship, Huawei Intelligence Base (top 5% in CoE)	<i>Dec. 2021</i>
First Prize, Merit Student Scholarship (top 5% in SUSTech)	<i>Oct. 2021</i>
First Prize, Merit Student Scholarship (top 5% in SUSTech)	<i>Oct. 2020</i>

COMPETITION AWARDS

Global First Prize , International Competition of Autonomous Running Robots	<i>Aug. 2022</i>
National Second Prize & TECH4ALL Prize , Huawei Undergraduate ICT Competition	<i>Dec. 2021</i>
National Second Prize , Chinese Undergraduate Electronics Design Contest	<i>Nov. 2021</i>
Global Second Prize , International Competition of Autonomous Running Robots	<i>Oct. 2021</i>
Second Prize , Chinese Undergraduate Mathematics Competition	<i>Dec. 2020</i>