Chen Li

chenliatoz@gmail.com | London, UK
LinkedIn: https://www.linkedin.com/in/chen-li-727698157 | Twitter: https://twitter.com/ArtwistLi
Google Scholar: https://scholar.google.com/citations?user=NPm503cAAAAJ&hl=en

Education

Ph.D. in Computer Science **2018 – 2022**
University of Manchester, United Kingdom Supervisor: Prof. Steve Furber
MSc in Spintronics and Quantum Optics **2015 – 2018**
Shanxi University, China
BSc in Applied Physics **2011 – 2015**
Nanchang University, China

Research and Working Experience

Applied Scientist **March.2025 – Now**
Algorithm Team, SpiNNcloud, Germany
Project: Several EU-funded projects including EdgeVision, EIC, PRIMI, etc.
- Scaling LLM from 1B to 8B by sparse-aware pretraining and distilling.
- Improving training throughput and stability via attention variants, MoE ablations, and optimizers (e.g., Muon).
- Accelerated LLM inference efficiently by designing and deploying customized algorithms for AI chips.
- Conducted joint academic and industry R&D spanning algorithm-hardware co-design to inform roadmap and technical strategy.

Research Associate (Postdoc) **Dec.2022 – Sep.2024**
King's Laboratory for Intelligent Computing (PI: Prof. Bipin Rajendran), King`s College London, United Kingdom
Project: NeuroSoC (EU-funded)
Project Goal: Achieving 100 times energy efficiency (TOPS/W) through In-memory Computing.
- Led robustness improvements of MobileBERT, deploying it on IBM's analog chip, boosting chip noise resilience.
- Fine-tuned LLAMA3.1 8B on Alpaca to enhance LLM performance on noisy hardware.
- Accelerated bio-inspired NNs by ~40% via decoding and uncertainty verifying (published at ICCV 2023).
- Created an integer-only NN inference engine for NN operations, optimizing inference efficiency.
- Coordinated with industry partners (STMicroelectronics, IBM, etc.); presented findings bi-weekly.
- Authored the project deliverables for EU Commission review.

Research Assistant **Sep.2018 – Dec.2022**
Advanced Processor Technologies (PI: Prof. Steve Furber), University of Manchester, United Kingdom
Project: SpiNNaker (part of EU flagship Human Brain Project)
Project Goal: mimicking the structure and function of human brain on silicon and simulate 1% human brain by efficient running and connecting 1 million ARM cores.
- Led the first DNN deployment on the SpiNNaker brain-inspired hardware.
- Enhanced accuracy and robustness of NNs mapped on room-temperature physical devices.
- Developed an acceleration framework for building low-latency bio-inspired NNs, using information compression and denoising.

Research Intern **Feb.2021 – June.2021**
Beijing Academy of Artificial Intelligence, China
Intern Project: Neuromorphic Computing

- Developed low-latency neuromorphic algorithms.

Publications

- **Boybat I, Boesch T, Allegra M, et al. Heterogeneous Embedded Neural Processing Units Utilizing PCM-based Analog In-Memory Computing[C]. IEEE International Electron Devices Meeting (Invited paper in IEDM).**
  Built an analog chip to accelerate MobileBERT inference compared to running on GPUs.
- **Li C, Jones E, Furber S. Unleashing the Potential of Spiking Neural Networks by Dynamic Confidence[C]. International Conference on Computer Vision 2023 (ICCV).**
  Proposed a Neural Network decoding method based on temporal confidence.
- **Li C, Ferro E, Lammie C, et al. Efficient Transformer Adaptation for Analog In-Memory Computing via Low-Rank Adapters[J]. Neuromorphic Computing and Engineering.**
  Llama 3 8B adaptations on analog hardware for via Reinforcement learning and long Chain-of-Thoughts.
- **Nimbekar A, Katti P, Li C, et al. Hardware-Software Co-optimized Inference Accelerator for Deep Spiking Networks[C]. IEEE International System-on-Chip Conference 2024 (SOCC).**
  Proposing a hardware accelerator for Spiking Neural Networks.
- **Katti P, Nimbekar A, Li C, et al. Bayesian Inference Accelerator for Spiking Neural Networks[C]. IEEE International Symposium on Circuits and Systems 2024 (ISCAS).**
  Developed a Bayesian accelerator to enhance the performance of Bayesian Spiking Neural Networks
- **Li C, Rajendran B. Noise Adaptor in Spiking Neural Network**
  Propose a plug-in-and-play module to improve both accuracy and scalability of Spiking Neural Networks.
- **Li C, Furber S, et al. Quantization Framework for Fast Spiking Neural [J]. Frontiers in Neuroscience, 2022, 16: 918793.**
  The state-of-the-art method to build ultra-low-latency Spiking Neural Networks on ImageNet.
- **Li C, Furber S. Towards Biologically-Plausible Neuron Models and Firing Rates in High-Performance Deep Spiking Neural Networks[C]. International Conference on Neuromorphic Systems 2021. 2021: 1-7.**
  Proposed a method to smooth spiking neurons by noise injections to achieve state-of-the-art accuracy.
- **Chen R, Li C, Li Y, et al. Nanoscale Room-Temperature Multilayer Skyrmionic Synapse for Deep Spiking Neural Networks[J]. Physical Review Applied, 2020, 14(1): 014096.**
  Proposed an Analog-in-memory computing (AIMC) architecture to accelerate Spiking Neural Networks
- **Li C, Chen R, Moutafis C, et al. Robustness to Noisy Synaptic Weights in Spiking Neural Networks[C]. International Joint Conference on Neural Networks 2020 (IJCNN). IEEE, 2020: 1-8.**
  Demonstrated how the noise in synapses affects neural network (both spiking and non-spiking) performance.

Professional Engagement

Conference Reviewer

- AAAI2022 ICML2022, ICML2024, EDTM2024, NIPs2024 NeuroAI workshop, ICLR2025 (Notable Reviewer), ISCAS2023. NIPs2025 dataset and benchmark track, ICLR2026

Journal Reviewer

- Neural Networks, Neurocomputing, TNNLS, TETCI, Transactions on Consumer Electronics, Frontiers in Neuroscience, Frontiers in Computational Neuroscience, Frontiers in Artificial Intelligence, Frontiers in Oncology

Editor

- Frontiers in Computational Neuroscience (Guest editor)

Mentorship

- Postgrad Research Mentor, Department of Computer Science, University of Manchester.
- King's Undergraduate Research Mentor, Department of Engineering, King`s College London.

Presentations

- Workshop on Neuromorphic Computing, Egham 2025 – Invited Presentation 2025
- Spiking Neural Networks as Universal Function Approximators – Poster Presentation 2023
- International Conference on Computer Vision – Poster Presentation 2023
- Neuromorphic Algorithms – Invited Poster Presentation 2022
- International Joint Conference on Neural Networks – Presentation 2021
- International Conference on Neuromorphic Systems – Presentation 2021