JIAN MENG

Personal Website: https://mengjian0502.github.io/
(+1) 503 810 8292 ⋄ jm2787@cornell.edu

EDUCATION

Cornell University *August 2023 - Present*
Doctor of Philosophy
Department of Electrical and Computer Engineering

Arizona State University *August 2019 - May 2023*
Doctor of Philosophy Overall GPA: 3.83/4.0
School of Electrical, Computer and Energy Engineering

Portland State University *September 2015 - June 2019*
Bachelor of Science Overall GPA: 3.61/4.0; Graduate level GPA: 3.75/4.0
Department of Electrical and Computer Engineering

RESEARCH INTERESTS

Seo Lab, Cornell **August 2019 - Present**
Advisor: Jae-sun Seo

- Energy-efficient self-supervised learning.
- Fast, efficient, and reliable 3D computer vision.
- Deep neural network compression algorithms.
- Robust digital and analog in memory computing.
- Neuromorphic hardware accelerator design.

Teuscher Lab, Portland State University **January 2018 - June 2019**

- Energy-efficient radiation detection platform.

WORKING EXPERIENCE

Research Scientist: Meta Reality Lab May. 2023 - Aug. 2023

- **Energy-efficient and high-quality compression algorithm design for Codec Avatar model** Investigate the quality enhancement strategy and algorithm with the low-precision model.

Teaching Assistant: Arizona State University Jan. 2022 - May 2022
EEE598: Neuromorphic Computing Hardware Design

System Engineer: Kilby Labs of Texas Instrument Jun. 2021 - Aug. 2021

- **End-to-end compiler design for neural network acceleration.** Design and test a Pytorch-based compiler for deploying low-precision neural networks to the in-memory-computing-based accelerator.

Teaching Assistant: Portland State University Sep. 2018 - Jun. 2019

- ECE 221/2/3 (Circuit Analysis) and ECE 510 (Mathematical Foundation of Machine Learning)

AWARDS

Finallist of 2023 Qualcomm Innovation Fellowship.

Best IP (Interactive Presentations) Paper Award, DATE, 2022.

Dean's List, Winter 2017, Spring 2017, Fall 2017, Portland State University.

SELECTED PUBLICATIONS

Conference Publications (*=Equal Contribution)

[**C10**] [**NeurIPS'23**] **Jian Meng**, Li Yang, Kyungmin Lee, Jinwoo Shin, Deliang Fan, and Jae-sun Seo, "Slimmed Asymmetrical Contrastive Learning and Cross Distillation for Lightweight Model Training," Conference on Neural Information Processing Systems (NeurIPS), 2023.

- [**C11**] [**AAAI'24**] **Jian Meng**, Li Yang, Jinwoo Shin, Deliang Fan, and Jae-sun Seo, "Synchronized Contrastive Pruning for Efficient Self-Supervised Learning" (under review) (**Invited & Presented in IBM Research AI Hardware Forum**)
- [**C10**] [**NeurIPS'22**] **Jian Meng***, Li Yang*, Jae-sun Seo, and Deliang Fan, "Get More at Once: Alternating Sparse Training with Gradient Correction," Conference on Neural Information Processing Systems (NeurIPS), 2022.
- [**C9**] [**CVPR'22**] **Jian Meng**, Li Yang, Jinwoo Shin, Deliang Fan, and Jae-sun Seo, "Contrastive Dual Gating: Learning Sparse Features With Contrastive Learning," Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022. (**Invited & Presented in IBM Research AI Hardware Forum**)
- [**C8**] [**DATE'22**] Fan Zhang, Li Yang, **Jian Meng**, Jae-sun Seo, Yu Cao and Deliang Fan, "XST: A Crossbar Column-wise Sparse Training for Efficient Continual Learning," IEEE Design, Automation & Test in Europe (DATE) [**Best IP (Interactive Presentations) Paper Award**].

[**C7**] [**IRPS'22**] **Jian Meng**, Injune Yeo, Wonbo Shim, Li Yang, Deliang Fan, Shimeng Yu, and Jae-sun Seo "Sparse and Robust RRAM-based Efficient In-memory Computing for DNN Inference" (IRPS).

[**C6**] [**ESSCIRC'22**] Shreyas K. Venkataramanaiah, **Jian Meng**, Han-Sok Suh, Injune Yeo, Jyotishman Saikia, Sai Kiran Cherupally, Yichi Zhang, Zhiru Zhang, and Jae-sun Seo, A 28nm 8-bit Floating-Point Tensor Core based CNN Training Processor with Dynamic Activation/Weight Sparsification, IEEE European Solid-State Circuits Conference (ESSCIRC), 2022.

[**C5**] [**FPT'21**] Han-sok Suh, **Jian Meng**, Ty Nguyen, Shreyas K. Venkataramanaiah, Vijay Kumar, Yu Cao, and Jae-sun Seo, Algorithm-Hardware Co-Optimization for Energy-Efficient Drone Detection on Resource-Constrained FPGA, IEEE ICFPT, 2021.

[**C4**] [**FPL'21**] **Jian Meng**, Shreyas Kolala Venkataramanaiah, Chuteng Zhou, Patrick Hansen, Paul Whatmough and Jae-sun Seo, "FixyFPGA: Efficient FPGA Accelerator for Deep Neural Networks with High Element-Wise Sparsity and without External Memory Access", International Conference on Field Programmable Logic and Applications (FPL), 2021.

[**C3**] [**IRPS'21**] Wonbo Shim, **Jian Meng**, Xiaochen Peng, Jae-sun Seo, and Shimeng Yu, "Impact of Multilevel Retention Characteristics on RRAM based DNN Inference Engine" (IRPS), 2021

[**C1**] [**INTERSPEECH'20**] Deepak Kadetotad, **Jian Meng**, Visar Berisha, Chaitali Chakrabarti, and Jae-sun Seo, Compressing LSTM Networks with Hierarchical Coarse-Grain Sparsity, INTERSPEECH, 2020.

Journal Publications

[**J4**] [**IEEE SSCM**] Jae-sun Seo, Jyotishman Saikia, **Jian Meng**, Wangxin He, Han-sok Suh, Anupreetham, Yuan Liao, Ahmed Hasssan, and Injune Yeo, Advances in Digital vs. Analog AI Accelerators, IEEE Solid-State Circuits Magazine, 2022

[**J3**] [**IEEE MICRO**] **Jian Meng**, Wonbo Shim, Li Yang, Deliang Fan, Shimeng Yu, and Jae-sun Seo, Temperature-Resilient RRAM-based In-Memory Computing for DNN Inference, IEEE Micro, 2021 (**Invited & Presented in IBM Research AI Hardware Forum**)

[**J2**] [**IEEE JETCAS**] Arnab Neelim Mazumder, **Jian Meng**, Hasib-Al Rashid, Utteja Kallakuri, Xin Zhang, Jae-sun Seo, Tinoosh Mohsenin, "A Survey on the Optimization of Neural Network Accelerators for Micro-AI On-Device Inference", IEEE JETCAS, 2021

[**J1**] [**IEEE TCAS-II**] **Jian Meng**, Li Yang, Xiaochen Peng, Shimeng Yu, Deliang Fan, Jae-sun Seo, "Structured Pruning of RRAM Crossbars for Efficient In-Memory Computing Acceleration of Deep Neural Networks". IEEE TCAS-II, 2021.