

Wei Zhao

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EDUCATION

Huazhong University of Science of Technology

B.E. in Electrical Science and Technology

School of Optical and Electrical Information (OEI)

Wuhan, Hubei province

Sep 2014 – Jun 2018

Huazhong University of Science of Technology

Ph.D. in Computer Architecture

Wuhan National Laboratory for Optoelectronics (WNLO)

Wuhan, Hubei province

Sep 2018 – Jun 2023

○ **Supervisor:** Dan Feng

○ **Research Areas in my Ph.D. career:**

Non-volatile Memory (NVM), Computing-in Memory, Memory and Storage System.

PUBLICATIONS

○ Conference Papers

1. Heng Zhou, Bing Wu, Huan Cheng, **Wei Zhao**, Xueliang Wei, Jinpeng Liu, Dan Feng and Wei Tong, "ODLPIM: A Write-Optimized and Long-Lifetime ReRAM-Based Accelerator for Online Deep Learning", in proceedings of 26th Design, Automation and Test in Europe Conference (**DATE'23, CCF B**).
2. Denghui Wu, Biyong Liu, **Wei Zhao**, Wei Tong. "ZNSKV: Reducing Data Migration in LSMT-Based KV Stores on ZNS SSDs" is accepted by 40th IEEE International Conference on Computer Design (**ICCD'22, CCF B**).
3. **Wei Zhao**, Dan Feng, Yu Hua, Wei Tong, Jingning Liu, Jie Xu, Chunyan Li, Gaoxiang Xu and Yiran Chen. "MORE²: Morphable Encryption and Encoding for Secure NVM", in Proceedings of 40-th International Conference On Computer-Aided Design (**ICCAD'21, CCF B**).
4. **Wei Zhao**, Wei Tong, Dan Feng, Jingning Liu, Zhangyu Chen, Jie Xu, Bing Wu, Chengning Wang and Bo Liu. "Improving the energy efficiency of STT-MRAM based approximate cache", in Proceedings of 24-th Design, Automation and Test in Europe Conference (**DATE'21, CCF B**).
5. **Wei Zhao**, Wei Tong, Dan Feng, Jingning Liu, Jie Xu, Xueliang Wei, Bing Wu, Chengning Wang, Weilin Zhu, Bo Liu. "OSwrite: Improving the lifetime of MLC STT-RAM with One-Step write", in proceedings of 36-th International Conference on Massive Storage Systems and Technology (**MSST'20, CCF B**).
6. Bing Wu, Dan Feng, Wei Tong, Jingning Liu, Chengning Wang, **Wei Zhao**, Mengye Peng.

"ReRAM Crossbar-Based Analog Computing Architecture for Naive Bayesian Engine", in Proceedings of International Conference of Computer Design (**ICCD'19, CCF B**).

o Journal Papers

1. Dong Huang, Dan Feng, Qiankun Liu, Bo Ding, **Wei Zhao**, Xueliang Wei, Wei Tong. "SplitZNS: Towards an Efficient LSM-Tree on Zoned Namespace SSDs" is accepted by ACM Transactions on Architecture and Code Optimization (**TACO, CCF A**), 2023.
2. **Wei Zhao**, Dan Feng, Wei Tong, Jingning Liu, Zhangyu Chen, Bing Wu, Chengning Wang. "APPcache+: An STT-MRAM based Approximate Cache System with Low Power and Long Lifetime" is accepted by Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD, CCF A**), 2023.
3. **Wei Zhao**, Jie Xu, Xueliang Wei, Bing Wu, Chengning Wang, Weilin Zhu, Wei Tong, Dan Feng, Jingning Liu. "A Low Latency and High Endurance MLC STT-MRAM based Cache System" in Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD, CCF A**), 2022.
4. Chengning Wang, Dan Feng, Wei Tong, Yu Hua, Jingning Liu, Bing Wu, **Wei Zhao**, Linghao Song, Yang Zhang, Jie Xu, Xueliang Wei, Yiran Chen. "Improving Multilevel Writes on Vertical 3D Cross-Point Resistive Memory", accepted by Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD, CCF A**), 2020.
5. Chengning Wang, Dan Feng, Wei Tong, Jingning Liu, Bing Wu, **Wei Zhao**, Yang Zhang, Yiran Chen. "Improving Write Performance on Cross-Point RRAM Arrays by Leveraging Multidimensional Non-Uniformity of Cell Effective Voltage", accepted by Transactions on Computers (**TC, CCF A**), 2020.
6. Chengning Wang, Dan Feng, Wei Tong, Jingning Liu, Bing Wu, **Wei Zhao**, Yang Zhang. "Design and Analysis of Address-Adaptive Read Reference Settings for Multilevel Cell Cross-Point Memory Arrays", accepted by IEEE Transactions on Electron Devices (**TED**), 2019.
7. Bing Wu, Dan Feng, Wei Tong, Jingning Liu, Chengning Wang, **Wei Zhao**, Yang Zhang. "A low power reconfigurable memory architecture for complementary resistive switches", accepted by IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD, CCF A**), 2019.
8. Chengning Wang, Dan Feng, Wei Tong, Jingning Liu, Zheng Li, Jiayi Chang, Yang Zhang, Bing Wu, Jie Xu, **Wei Zhao**, Yilin Li, Ruoxi Ren, "Cross-point resistive memory: Nonideal properties and solutions", ACM Transactions on Design Automation of Electronic Systems (**TODAES, CCF B**), 2019.

TALKS

- o "MORE2: Morphable Encryption and Encoding for Secure NVM", oral presentation in ICCAD 2021.
- o "Improving the energy efficiency of STT-MRAM based approximate cache", oral presentation in

DATE 2021.

- "OSwrite: Improving the lifetime of MLC STT-RAM with One-Step write", oral presentation in MSST 2020.

Patents

1. 一种通过数据模式重布局降低 MLC NAND 闪存误码率的方法 [发明, 已授权], 童薇, 刘景宁, 冯丹, 赵雨桐, 覃鸿巍, **赵威**, 申请号: CN201811506261.5
2. 一种适用于 MLC NAND 闪存的 LDPC 码译码方法 [发明, 已授权], 童薇, 刘景宁, 冯丹, 赵雨桐, 覃鸿巍, **赵威**, 申请号: CN201811401607.5
3. 一种提升 STT-MRAM 近似缓存能效的方法及系统 [发明, 已授权], 童薇, 冯丹, **赵威**, 陈章玉, 吴兵, 汪承宁, 申请号: CN202110484855.6
4. 基于阻变存储阵列的朴素贝叶斯分类方法、引擎及系统 [发明, 已授权], 冯丹, 童薇, 彭梦焯, 吴兵, **赵威**, 申请号: CN201911100579.8

Industry Standards

1. 信息技术 存储管理 第 2 部分: 通用架构, 标准号: GB/T 36450.2-2021
2. 信息技术 存储管理 第 5 部分: 文件系统, 标准号: GB/T 36450.5-2021
3. 信息技术 存储管理 第 6 部分: 交换结构, 标准号: GB/T 36450.6-2021
4. 信息技术 存储管理 第 7 部分: 主机元素, 标准号: GB/T 36450.7-2021
5. 信息技术 存储管理 第 8 部分: 媒体库, 标准号: GB/T 36450.8-2021

SKILLS

- **Programming Language** – C, C++, Python, Shell, CUDA
- **Tools** – Git, L^AT_EX
- **Simulators** – Gem5, NVmain, GPGPUsim. NVsim.
- **Language** – Good English Writing, Reading.

AWARDS

- Outstanding undergraduate graduate of HUST in 2018.
- Excellent Postgraduate Student in HUST, 2019.
- ZhiXing Excellent Postgraduate Scholarship (1000 CNY), 2020.
- WNLO Excellent Postgraduate Scholarship (10000 CNY), 2021

Academic Services

- The reviewer of International Journal of Information Technology & Decision Making (JCR Q3).

- The reviewer of DAC 2023 (CCF A).
- The reviewer of ICIC 2023 (CCF C).
- The sub-reviewer of ATC 2023 (CCF A).
- The sub-reviewer of FAST 2023 (CCF A).