Xin Xin

Address: 4328 Scorpius St, Orlando, FL 32816
Email: xin.xin@ucf.edu
Homepage: `https://xinx2013.github.io/`
Phone: (+1) 407 823 1753

Research Interests

My research interests primarily lie in the field of computer architecture with a focus on memory subsystems, e.g., main memory performance/power/reliability, processing-in-memory (PIM)/near-data-processing (NDP), hybrid DRAM-NVM system, and memory-based accelerators. I also have broad research/working experiences spanning from computer architecture to integrated circuit design to semiconductor devices.

Education

University of Pittsburgh — Pittsburgh, PA
Ph.D. in Electrical and Computer Engineering — Jan. 2018 - Jun. 2023
Advisor: Jun Yang

Tsinghua University — Beijing, China
M.E. in Electrical Engineering — Sep. 2013 - Jul. 2016
Advisors: Tianling Ren and Yi Yang

Lanzhou University — Lanzhou, China
B.S. in Electrical Engineering — Sep. 2009 - Jul. 2013

Professional Experiences

University of Central Florida — Orlando, FL
Tenure-Track Assistant Professor — Aug. 2023 - *present*

Alibaba Group — Sunnyvale, CA
Research Intern — Aug. 2021 - Dec. 2021

Huada Electronic Design Co., Ltd. — Beijing, China
Digital Design Engineer — Aug. 2016 - Aug. 2017

University of Pittsburgh — Pittsburgh, PA
Graduate Research Assistant — Jan. 2018 - Jul. 2023

Tsinghua University — Beijing, China
Graduate Research Assistant — Spe. 2013 - Jul. 2016

Research

List of Publications (citation: 270, h-index: 6 as of Jan. 20^{th}, 2025)
Student(*), Postdoc(**), Collaborator(†), Advisor(‡)

Published

C1 Fan Li*, Mimi Xie†, Yanan Guo†, Huize Li**, and **Xin Xin**, "SCREME: A Scalable Framework for Resilient Memory Design," in Proceedings of the 34th ACM/IEEE International Conference on Parallel Architectures and Compilation Techniques. **(PACT 2025, Top-Tier, Accepted)**

C2 Fan Li*, Ruizhi Zhu*, Huize Li**, Di Wu†, and **Xin Xin**, "PIM-SUM: Fast and Reliable In-Memory Summation for Recommendation Systems ," in Proceedings of the 43rd IEEE International Conference on Computer Design. **(ICCD 2025, Accepted)**

C3 Liang Liu*, Sadra Rahimi Kari, **Xin Xin**, Nathan Youngblood†, Youtao Zhang†, and Jun Yang‡, "LightML: A Photonic Accelerator for Efficient General Purpose Machine Learning," in Proceedings of the 52nd ACM Annual International Symposium on Computer Architecture. **(ISCA 2025, Top-Tier)**

C4 Weidong Cao†, Jian Gao, **Xin Xin**, and Xuan Zhang†, "Addition is Most You Need: Efficient Floating-Point SRAM Compute-in-Memory by Harnessing Mantissa Addition," in Proceedings of the 61st ACM/IEEE Design Automation Conference. **(DAC 2024)**

C5 Yanan Guo†, Dingyuan Cao, **Xin Xin**, Youtao Zhang†, and Jun Yang‡, "Uncore Encore: Covert Channels Exploiting Uncore Frequency Scaling," in Proceedings of the 56th ACM/IEEE International Symposium on Microarchitecture. **(MICRO 2023, Top-Tier)**

C6 Yanan Guo†, **Xin Xin**, Youtao Zhang†, and Jun Yang‡, "Leaky Way: A Conflict-Based Cache Covert Channel Bypassing Set Associativity," in Proceedings of the 55th ACM/IEEE International Symposium on Microarchitecture. **(MICRO 2022, Top-Tier)**

C7 **Xin Xin**, Wanyi Zhu†, and Li Zhao†, "Architecting DDR5 DRAM Caches for Non-Volatile Memory Systems," in Proceedings of the 59th ACM/IEEE Design Automation Conference. **(DAC 2022)**

C8 **Xin Xin**, Yanan Guo†, Youtao Zhang†, and Jun Yang‡, "SAM: Accelerating Strided Memory Accesses," in Proceedings of the 54th ACM/IEEE International Symposium on Microarchitecture. **(MICRO 2021, Top-Tier)**

C9 Congming Gao†, **Xin Xin**, Youyou Lu, Youtao Zhang†, Jun Yang‡, and Jiwu Shu, "ParaBit: Processing Parallel Bitwise Operations in NAND Flash Memory based SSDs," in Proceedings of the 54th ACM/IEEE International Symposium on Microarchitecture. **(MICRO 2021, Top-Tier)**

C10 **Xin Xin**, Youtao Zhang†, and Jun Yang‡, "Reducing DRAM Access Latency via Helper Rows," in Proceedings of the 57th ACM/IEEE Design Automation Conference. **(DAC 2020)**

C11 **Xin Xin**, Youtao Zhang†, and Jun Yang‡, "ELP2IM: Efficient and Low Power Bitwise Operation Processing in DRAM," in Proceedings of the 26th IEEE International Symposium on High-Performance Computer Architecture. **(HPCA 2020, Top-Tier)**

C12 **Xin Xin**, Youtao Zhang†, and Jun Yang‡, "ROC: DRAM-based Processing with Reduced Operation Cycles," in Proceedings of the 56th ACM/IEEE Design Automation Conference. **(DAC 2019)**

J1 **Xin Xin**, Haiming Zhao, Huiwen Cao, He Tian, Yi Yang‡, and Tianling Ren‡, "In situ observation of electrical property of thin-layer black phosphorus based on dry transfer method," Applied Physics Express, 2016, 9(4): 45202.

J2 Ziming Zhang§, **Xin Xin**§, Qingfeng Yan, Qiang Li, Yi Yang‡, and Tianling Ren‡, "Two-step heating synthesis of sub-3 millimeter-sized orthorhombic black phosphorus single crystal by chemical vapor transport reaction method," Science China Materials, 2016, 59(2): 122-134. *(§ equal contribution)*

J3 Huiwen Cao, Haiming Zhao, **Xin Xin**, Pengzhi Shao, Hanyu Qi, Muqiang Jian, Yingying Zhang, Yi Yang‡, and Tian-Ling Ren‡, "Large-scale synthesis of WSe2 atomic layers on SiO2/Si," Modern Physics Letters B, 2016, 30(18): 1650267.

J4 Yutao Li, Haiming Zhao, He Tian, Pengzhi Shao, **Xin Xin**, Huiwen Cao, Ningqin Deng, Yi Yang‡, and Tianling Ren‡, "Novel Field Effect Transistor Fabrication Based on Non-Graphene 2D Materials," MRS Advances, 2017, 2(60): 3675-3684.

J5 Huiwen Cao, Yupeng Jing, Shirui Zhao, Xinwei Xu, He Tian, **Xin Xin**, Xiaoning Li, Bo Liu, Ruitao Liu, Gang Wang, Jie Ge, Hualin Cai, Yi Yang‡, and Tianling Ren‡, "A discovery of an ultra-pure water detection method based on water mark," Modern Physics Letters B, 2015, 29(03): 1450271.

Teaching and Supervision Activities

Courses — Orlando, FL

EEL 5706 - Resilient Computer System Design — Aug. 2025 - *present*
EEL 4781 - Computer Communication Networks *(SPI: 4.36/5.0)* — Jan. 2025 - Apr. 2024
EEL 5706 - Resilient Computer System Design *(SPI: 5.0/5.0)* — Aug. 2024 - Dec. 2024
EEL 4781 - Computer Communication Networks *(SPI: 3.6/5.0)* — Jan. 2024 - Apr. 2024

Supervision — Orlando, FL

Postdoc: Huize Li — Feb. 2025 - *present*
PhD students: Ruizhi Zhu *(Memory Reliability)* — Aug. 2025 - *present*
PhD students: Fan Li *(Memory Performance)* — Jan. 2025 - *present*
PhD students: Ahmed Mustakim *(Hybrid Memory)* — Aug. 2024 - *present*

Professional Services

Reviewer
2026 International Symposium on High-Performance Computer Architecture (HPCA'26)
2026 Special Interest Group on Measurement and Evaluation (SIGMETRICS'26)
2025 International Symposium on Microarchitecture (MICRO'25)
2025 International Symposium on Computer Architecture (ISCA'25)
2025 International Symposium on High-Performance Computer Architecture (HPCA'25)
2025 Special Interest Group on Measurement and Evaluation (SIGMETRICS'25)
2024 Special Interest Group on Measurement and Evaluation (SIGMETRICS'24)
2024 Computer Society Annual Symposium on VLSI (ISVLSI'24)
IEEE Transactions on Computers
IEEE Computer Architecture Letters
ACM Transactions on Embedded Computing Systems
Journal of Systems Architecture

Services
2026 International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS'26): Artifact Evaluation Chair
2025 NSF Panel: Reviewer
2024 International Symposium on Secure and Private Execution Environment Design (SEED'24): Local Chair
2020 International Symposium on Microarchitecture (MICRO'20): Student Assistant

Funding activities

PI: **NSTC**-SMAP — Pending, $399,225
LightPIM: 3D-Stacked Hybrid In/Near-Memory AI Computing in Data Centers with Photonics and Resistive Memory
PI: **NSF**-FET — Pending, $400,000
Medium: LightML: General Machine Learning Compute Engine via Photonic Processing.

Honors And Awards

University of Pittsburgh EGSO Travel Grant	2021
NSF/HPCA Travel Grant	2020
DAC 2020 Young Student Fellow	2020
Graduated with the Highest Honor set by the Government of Beijing	2016
Graduated with the Highest Honor set by Lanzhou University	2013