
Electrical & Computer Engineering
S E M I N A R
Louisiana State University

**Improving the Performance of DRAM
Memory Subsystem at Lower Design Cost**

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Abstract—Over the past years, driven by an increasing number of data-intensive applications, architects have proposed a variety of memory-centric strategies, e.g., processing-in-memory (PIM), near-data processing (NDP), and memory-based accelerators, to bridge the gap between computing and storage. The potential benefits of these innovations, including improved performance and energy efficiency, have been demonstrated through numerous studies. However, the increasing complexity and hardware overhead of these memory-centric innovations are often in conflict with the cost-sensitive nature of memory, which have been optimized for cost-per-bit. In this talk, I will present several memory-centric architecture solutions that offer new functionalities at negligible or zero cost by maximizing resource utilization in memory. This approach to efficiency does not rely on expensive technology advancements. The talk will include two representative studies: a compute-capable memory architecture, which increases bandwidth by moving computation to the memory side, and a multi-dimensional accessible memory architecture, which improves bandwidth efficiency through flexible memory accesses.

Bio—Xin Xin is a PhD candidate in the Department of Electrical and Computer Engineering at the University of Pittsburgh. He received his Master's degree from Tsinghua University in 2016 and his Bachelor's degree from Lanzhou University in 2013. He interned at Alibaba Group, Sunnyvale, in Fall 2021, and worked as a digital IC engineer at Huada Electronics, Beijing, in 2017. Xin's research interests reside at computer architecture with emphasis on the memory system, e.g., main memory (DRAM) performance/power/reliability, processing-in-memory (PIM)/near-data-processing (NDP), hybrid DRAM-NVM system, and memory-based accelerators.

When: Wednesday, 8 March 2023, 11:20 - 12:20

Where: Room 3285 Patrick F. Taylor Hall

Info: <https://www.lsu.edu/eng/ece/seminar>

