

Wenjing Jin

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Current Position

2024.09 – present **Samsung Electronics, Korea**
Staff Engineer in AP Architecture Group (MX)

Education

2017.03 – 2024.08 **Seoul National University, Korea**
Ph.D. in Computer Science and Engineering
Thesis: Software-Transparent DRAM Power Savings and Reliability Enhancement for CXL-enabled Disaggregated Memory

2015.03 – 2017.02 **Sungkyunkwan University, Korea**
M.S. in Electrical and Computer Engineering
Thesis: Optimizing Degree of Parallelism for Spark Clusters

2009.09 – 2013.06 **Yanbian University, China**
B.S. in Electronic Communication Engineering

Research Area

Memory System Memory management unit (MMU), Linux kernel memory management, DRAM, CXL disaggregated memory, Power management, RAS features.

Other Technologies Solid-state drive (SSD), RISC-V, Linux kernel optimization.

Research Publications

- 2024 **Wenjing Jin**, Wonsuk Jang, Junghoon Kim, Seong Hoon Seo, and Jae W. Lee, "M3: Software-Transparent Adaptive Partial Mirroring for Disaggregated Memory", in *IEEE International Symposium on High-Performance Computer Architecture (HPCA)*, Las Vegas, NV, 2025. (Under review)
- 2024 **Wenjing Jin**, Jeonghun Gong, and Jae W. Lee, "FPGA Implementation of Hardware-based Demand Paging on RISC-V Architecture", in *The 39th International Technical Conference on Circuits/Systems, Computers, and Communications (ITC-CSCC)*, Okinawa, Japan, 2024.
- 2023 **Wenjing Jin**, Wonsuk Jang, Haneul Park, Jongsung Lee, Soosung Kim, and Jae W. Lee, "DRAM Translation Layer: Software-Transparent DRAM Power Savings for Disaggregated Memory", in *Proceedings of the 50th Annual International Symposium on Computer Architecture (ISCA)*, Orlando, Florida, June 2023.
- 2020 Gyusun Lee*, **Wenjing Jin***, Wonsuk Song, Jeonghun Gong, Jonghyun Bae, Tae Jun Ham, Jae W. Lee, Jinkyu Jeong, "A Case for Hardware-based Demand Paging", in *ACM/IEEE 47th Annual International Symposium on Computer Architecture (ISCA)*, Valencia, Spain, May 2020. (* **co-first author**)
- 2019 Jonghyun Bae, Hakbeom Jang, Jeonghun Gong, **Wenjing Jin**, Shine Kim, Jaeyoung Jang, Tae Jun Ham, Jinkyu Jeong, Jae W. Lee, "SSDStreamer: Specializing I/O Stack for Large-Scale Machine Learning", in *IEEE Micro*, September/October 2019.
- 2019 Shine Kim, Jonghyun Bae, Hakbeom Jang, **Wenjing Jin**, Jeonghun Gong, Seungyeon Lee, Tae Jun Ham, and Jae W. Lee, "Practical Erase Suspension for Modern Low-latency SSDs", in *USENIX Annual Technical Conference (ATC)*, Seattle, Washington, July 2019.
- 2017 Jonghyun Bae, Hakbeom Jang, **Wenjing Jin**, Jun Heo, Jaeyoung Jang, Joo-Young Hwang, Sangyeun Cho, and Lee, Jae W. Lee, "Jointly Optimizing Task Granularity and Concurrency for In-memory Mapreduce Frameworks", in *IEEE International Conference on Big Data (BigData)*, Boston, MA, December 2017.

2016 Jonghyun Bae, Sangoh Jeong, **Wenjing Jin**, and Jae W. Lee, "ggplot2.SparkR: Rebooting ggplot2 for Scalable Big Data Visualization", in *Spark Summit East*, New York City, New York, February, 2016.

Patents

- US,EP,CN,KR **Method for processing page fault by processor (US11436150B2, EP3916567B1, CN113742115B, KR102400977B1)**
with Jinkyu Jeong, Jae W. Lee, Gyun Lee, and Tae Jun Ham.
- US,KR **MEMORY SYSTEM AND COMPUTING SYSTEM INCLUDING THE SAME (Pending-18110582, Pending-10-2022-0086052)**
with Kiseok Oh, Jae W. Lee, Jongsung Lee, and Juyun Jung.

Engineering and Prototyping Projects

- 2021-2022 **Prototyping hardware-based demand paging.**
- Based on the research paper: [ISCA'20] "A Case for Hardware-based Demand Paging".
 - Implemented hardware-based demand paging using FPGA on the RISC-V Rocket core.
 - TSMC 40nm GP tape-out.
- 2015 **ggplot2.sparkR package for Apache Spark.**
- ggplot2.SparkR is an R package for scalable visualization of big data represented in Apache Spark DataFrame.
 - Web site: <http://papl-skku.github.io/ggplot2.SparkR/>

Talks

- 2023 "DRAM Translation Layer: Software-Transparent DRAM Power Savings for Disaggregated Memory", in 2023^{2nd} SNU-Samsung CXL/UCIe Workshop. Dec 7.

Honors and Awards

- 2017-2018 **SNU Global Scholarship**, Seoul National University.
- 2015-2016 **International Student Scholarship**, Sungkyunkwan University.
- 2013 **President's Award for Academic Excellence**, Yanbian University.
- 2011-2013 **Scranton Women's full scholarship**, Scranton Women's Leadership Center, Korea.
- 2011-2012 **Model Student of Academic Records**, Yanbian University.

Skills

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| Languages | Reading, writing and speaking competencies for English, Mandarin Chinese, and Korean. |
| Programming Languages | Java, Scala, C, Verilog, Chisel, R, Shell, \LaTeX |
| Tools and Technologies | Docker, Git, Google Cloud, FPGA, RISC-V, AXI, NVMe, experience in using simulators like Gems, ZSim, DRAMSim, and Ramulator. |