

HYUNGYO KIM

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EDUCATION

University of Illinois at Urbana-Champaign Ph.D candidate in Electrical and Computer Engineering	<i>August 2021 - Current</i>
Seoul National University B.S. in Electrical and Computer Engineering (<i>summa cum laude</i>)	<i>March 2014 - February 2020</i>
Gyeonggi Science High School Specialized high school for students talented in math and science	<i>March 2011 - February 2014</i>

EXPERIENCE

University of Illinois at Urbana-Champaign Graduate Research Assistant (Advisor: Prof. Nam Sung Kim) • Research on AI systems for inference and training	<i>August 2023 - Current</i> Urbana, IL
IBM Research AI Research Scientist Intern (Supervisor: Dr. Apoorve Mohan) • Research on memory efficient large language model training	<i>May 2025 - August 2025</i> Yorktown Heights, NY
Intel Corporation AI Research Engineering Intern (Supervisor: Dr. Frank Hady) • Software development for heterogeneous computing system for large language model inference	<i>May 2024 - August 2024</i> Champaign, IL
Samsung Electronics Research Intern (Supervisor: Jinin So) • Research on large language model inference acceleration via processing near memory	<i>July 2023 - August 2023</i> Hwaseong, Korea
University of Illinois at Urbana-Champaign Graduate Research Assistant (Advisor: Prof. Naresh R. Shanbhag) • Research on in-memory computing for efficient machine learning	<i>August 2021 - June 2023</i> Urbana, IL
SMDL, Seoul National University Research Intern (Advisor: Prof. Jong-Ho Lee) • Research on on-chip training of neural networks with analog conductance synaptic device	<i>June 2020 - July 2021</i> Seoul, Korea

HONORS & AWARDS

IEEE CAL Best Paper Award	IEEE Computer Society Publications Board	<i>2025</i>
IIDAI Student Best Poster Award	IBM-Illinois Discovery Accelerator Institute	<i>2025</i>
List of Teachers Ranked as Excellent	University of Illinois at Urbana-Champaign	<i>2023</i>
PhD Fellowship	Samsung Electronics	<i>2023</i>

Korean Government Scholarship for Study Overseas	Korean Government	2021
Graduated with Highest Honors (<i>Summa Cum Laude</i>)	Seoul National University	2020
Eminence Scholarship	Seoul National University	2019
National Scholarship for Science and Engineering	Korea Student Aid Foundation	2018
Merit-Based Scholarship	Seoul National University	2014

PROFESSIONAL SERVICES AND ACTIVITIES

Reviewer

IEEE Computer Architecture Letters (CAL)	2025
IEEE Transactions on Parallel and Distributed Systems (TPDS)	2025

MILITARY SERVICE

ROK Marine Corps Force Reconnaissance	October 2015 - July 2017
Reconnaissance Marine	Baengnyeong-Island, Korea

PUBLICATIONS

12. Shuo Li, Chihun Song, **Hyungyo Kim**, Nam Sung Kim, Naresh R. Shanbhag, “Characterizing the Intrinsic Bank-level Accuracy vs. Energy Trade-off of SRAM-Based In-Memory Computing Architectures in 28nm CMOS,” *IEEE Transactions on Circuits and Systems I: Regular Papers (TCAS-I)*, October 2025.
11. Nachuan Wang, **Hyungyo Kim**, and Nam Sung Kim, “LPC: Lossless Parameter Compression for Deploying LLM Inference on Edge Systems,” *IEEE Embedded Systems Letters (ESL)*, October 2025.
10. Sungmin Yun, Seonyong Park, Hwayong Nam, Younjoo Lee, Gunjun Lee, Kwanhee Kyung, Sangpyo Kim, Nam Sung Kim, Jongmin Kim, **Hyungyo Kim**, Juhwan Cho, Seungmin Baek, Jung Ho Ahn, “The New LLM Bottleneck: A Systems Perspective on Latent Attention and Mixture-of-Experts,” *arXiv preprint*, July 2025.
9. Jinghan Huang, **Hyungyo Kim**, Nachuan Wang, Jaeyoung Kang, Hrishi Shah, Eun Kyung Lee, Minjia Zhang, Fan Lai, Nam Sung Kim, “NetZIP: Algorithm/Hardware Co-design of In-network Lossless Compression for Distributed Large Model Training,” *58th IEEE/ACM International Symposium on Microarchitecture (MICRO)*, October 2025.
8. Yue Pan, Zihan Xia, Po-Kai Hsu, Lanxiang Hu, **Hyungyo Kim**, Janak Sharda, Minxuan Zhou, Nam Sung Kim, Shimeng Yu, Tajana Rosing, “Stratum: System-Hardware Co-design with Tiered Monolithic 3D-DRAM for Efficient MoE Serving,” *58th IEEE/ACM International Symposium on Microarchitecture (MICRO)*, October 2025.
7. **Hyungyo Kim**, Nachuan Wang, Qirong Xia, Jinghan Huang, Amir Yazdanbaksh, and Nam Sung Kim, “LIA: A Single-GPU LLM Inference Acceleration with Cooperative AMX-Enabled CPU-GPU Computation and CXL Offloading,” *2025 IEEE International Symposium on Computer Architecture (ISCA)*, June 2025.

6. **Hyungyo Kim**, Gaohan Ye, Nachuan Wang, Amir Yazdanbakhsh, and Nam Sung Kim, “Exploiting Intel[®] Advanced Matrix Extensions (AMX) for Large Language Model Inference,” *IEEE Computer Architecture Letters (CAL)*, May 2024.
5. **Hyungyo Kim** and Naresh Shanbhag, “Enhancing the Accuracy of 6T SRAM-based In-Memory Architecture via Maximum Likelihood Detection,” *IEEE Transactions on Signal Processing*, April 2024.
4. Sang-Soo Park, KyungSoo Kim, Jinin So, Jin Jung, Jonggeon Lee, Kyoungwan Woo, Nayeon Kim, Younghyun Lee, **Hyungyo Kim**, Yongsuk Kwon, Jinhyun Kim, Jieun Lee, YeonGon Cho, Yongmin Tai, Jeonghyeon Cho, Hoyoung Song, Jung Ho Ahn, and Nam Sung Kim, “An LPDDR-based CXL-PNM platform for TCO-efficient inference of Transformer-based large language models,” *IEEE International Symposium on High-Performance Computer Architecture (HPCA)*, March 2024.
3. **Hyungyo Kim** and Naresh Shanbhag, “Boosting The Accuracy of SRAM-based In-memory Architectures via Maximum Likelihood-based Error Compensation Methods,” *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, June 2023.
2. **Hyungyo Kim***, Joon Hwang*, Dongseok Kwon, Jangsaeng Kim, Jiseong Im, Byung-Gook Park, and Jong-Ho Lee, “Direct Gradient Calculation: Simple and Variation-Tolerant On-Chip Training Method for Neural Networks,” *Advanced Intelligent Systems*, August 2021.
(* : equal contribution)
1. **Hyungyo Kim**, Man-Jun Gim, Hyun-Jun Jeon, Minchul Kim, Jun-Ho Jeun, Jung-Min Kim, and Yong-Sang Kim, “Nonvolatile organic memory devices with CdTe quantum dots,” *Microelectronic Engineering*, November 2013.