

# HYOJONG KIM

*Ph.D. Candidate in Computer Science*

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## OBJECTIVE

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Computer science Ph.D. with proven computer architecture research and programming skills. Seeking a position as a full-time research or software engineering position to leverage programming and research skills.

## EDUCATION

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**Georgia Institute of Technology**, Atlanta, Georgia, USA (Expected) *Dec 2019*  
*Ph.D. in Computer Science* (Advisor: Dr. Hyesoon Kim)

**Seoul National University**, Seoul, South Korea *Aug 2012*  
*B.S. in Electrical Engineering and Computer Science*

## SKILLS

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**Programming Languages:** C/C++, Python

**Architecture Simulators:** MacSim, SST, GEM5, GPGPU-Sim

**Research Domains:** Computer Architecture, GPUs, Memory Systems, Hardware Accelerators, Distributed Computing, Processing in Memory, Performance Modeling

**Select Graduate Courses:** High Performance Computer Architecture, Advanced Microarchitecture, Advanced Topics in Memory Systems, Algorithms and Computability

## RESEARCH/WORK EXPERIENCE

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**Georgia Institute of Technology**, Atlanta, Georgia, USA *Aug 2012 – Present*  
*Graduate Research Assistant* (Advisor: Dr. Hyesoon Kim)  
Projects: System modeling of CPU-GPU for 3D memory systems, Performance and Energy modeling of processing-in-memory (PIM) architecture, Virtual address support for PIM architecture

**AMD Research**, Sunnyvale, California, USA *May 2015 – Aug 2016*  
*Co-op Engineer* (Supervisor: Dr. Nuwan Jayasena)  
Project: Virtual address support for PIM architecture

**Sandia National Laboratories**, Albuquerque, New Mexico, USA *May 2013 – Aug 2013*  
*Summer Research Intern* (Supervisor: Dr. Arun Rodrigues)  
Project: SST-MacSim system modeling of CPU-GPU for 3D-stacked memory

**Samsung Electronics – System LSI** *Dec 2011 – Feb 2012*  
*Undergraduate Intern*  
Project: Advanced bus system modeling for an application processor

**Georgia Institute of Technology**, Atlanta, Georgia, USA *May 2011 – Aug 2011*  
*Undergraduate Research Intern* (Supervisor: Dr. Minjang Kim, Dr. Hyesoon Kim)  
Project: Case studies for a post-analyzer of data dependence profiler

**Vixell Co., Ltd. – In Fulfillment of Military Service** *Jun 2009 – Dec 2010*  
*Software Engineer*  
Project: Electronic toll-collection system development

## PUBLICATIONS

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1. Jie Zhang, Miryeong Kwon, **Hyojong Kim**, Hyesoon Kim, and Myoungsoo Jung. FlashGPU: Placing New Flash Next to GPU Cores, *Design Automation Conference (DAC)*, 2019.
2. Lifeng Nai, Ramyad Hadidi, He Xiao, **Hyojong Kim**, Jaewoong Sim, and Hyesoon Kim. Thermal-Aware Processing-in-memory Instruction Offloading, *Journal of Parallel and Distributed Computing (JPDC)*, 2019.
3. **Hyojong Kim**, Ramyad Hadidi, Lifeng Nai, Hyesoon Kim, Nuwan Jayasena, Yasuko Eckert, Onur Kayiran, and Gabriel Loh. CODA: Enabling Co-location of Computation and Data for Multiple GPU Systems, *ACM Transactions on Architecture and Code Optimization (TACO)*, 2018. **Presented at the HiPEAC (European Network on High Performance and Embedded Architecture and Compilation) conference, 2019.**
4. Prasun Gera, **Hyojong Kim**, Hyesoon Kim, Sunpyo Hong, Vinod George, and Chi-Keung (CK) Luk. Performance Characterisation and Simulation of Intel’s Integrated GPU Architecture, *International Symposium on Performance Analysis of Systems and Software (ISPASS)*, 2018
5. Lifeng Nai, Ramyad Hadidi, He Xiao, **Hyojong Kim**, Jaewoong Sim, and Hyesoon Kim. CoolPIM: Thermal-Aware Source Throttling for Efficient PIM Instruction Offloading, *IEEE International Parallel & Distributed Processing Symposium (IPDPS)*, 2018.
6. Ramyad Hadidi, Lifeng Nai, **Hyojong Kim**, and Hyesoon Kim. CAIRO: A Compiler-Assisted Technique for Enabling Instruction-Level Offloading of Processing-In-Memory, *ACM Transactions on Architecture and Code Optimization (TACO)*, 2018.
7. Pranith Kumar, Prasun Gera, **Hyojong Kim**, and Hyesoon Kim. Louvre: Light-weight Ordering Using Versioning for Release Consistency, *arXiv:1710.10746*, 2017.
8. Jen-Cheng Huang, Lifeng Nai, Pranith Kumar, **Hyojong Kim**, and Hyesoon Kim. SimProf: A Sampling Framework for Data Analytic Workloads, *International Parallel & Distributed Processing Symposium (IPDPS)*, 2017.
9. Lifeng Nai, Ramyad Hadidi, Jaewoong Sim, **Hyojong Kim**, Pranith Kumar, and Hyesoon Kim. GraphPIM: Enabling Instruction-Level PIM Offloading in Graph Computing Frameworks, *International Symposium on High Performance Computer Architecture (HPCA)*, 2017.
10. **Hyojong Kim**, Hyesoon Kim, Sudhakar Yalamanchili, and Arun Rodrigues. Understanding Energy Aspect of Processing Near Memory for HPC Workloads, *International Symposium on Memory Systems (MEMSYS)*, 2015. **Best Paper Award**
11. **Hyojong Kim**, Hongyeol Lim, Dilan Manatunga, Hyesoon Kim, and Gi-Ho Park. Accelerating application start-up with Nonvolatile Memory in Android Systems, *IEEE Micro*, 2015.
12. Chad Kersey, Sudhakar Yalamanchili, **Hyojong Kim**, Nimit Nigania, and Hyesoon Kim. Harmonica: An FPGA-based Data Parallel Soft Core, *International Symposium on Field-Programmable Custom Computing Machines (FCCM)*, 2014.
13. Joo Hwan Lee, Kaushik Patel, Nimit Nigania, **Hyojong Kim**, and Hyesoon Kim. OpenCL Performance Evaluation on Modern Multi Core CPUs, *Parallel and Distributed Processing Symposium Workshops & PhD Forum (IPDPSW)*, 2013.

## PATENTS

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Per-page control of physical address space distribution among memory modules. Nuwan S. Jayasena, **Hyojong Kim**, and Hyesoon Kim. US Patent Pub. No. 2018/0246814.

## HONORS/AWARDS

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**Best paper award** at the 1st International Symposium on Memory Systems (MEMSYS) for the paper Understanding Energy Aspect of Processing Near Memory for HPC Workloads, **Hyojong Kim**, Hyesoon Kim, Sudhakar Yalamanchili, and Arun Rodrigues.

**Scholarship for the Distinguished Undergraduates**  
Korea Foundation of Advanced Studies

*Mar 2005 – Aug 2012*

## PROFESSIONAL SERVICES

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### Conference Reviewer

- International Conference on Supercomputing (ICS) 2015

### Journal Reviewer

- IEEE Computer Architecture Letters (CAL) 2019
- IEEE Computer Architecture Letters (CAL) 2018
- IEEE Computer Architecture Letters (CAL) 2017

## OPEN SOURCE SOFTWARE

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MacSim: a heterogeneous micro-architecture simulator (<https://github.com/gthparch/macsim>)

- Added virtual memory support for x86 and GPU architectures.
- Modeled Intel GEN GPU architecture in MacSim.
- Integrated MacSim with SST framework.