Euijun Chung

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INTRODUCTION

Euijun Chung is a **second-year CS PhD student at Georgia Tech**, focusing on **GPU architecture and simulations**. His research interests lie on cycle-level GPU simulation and performance modeling, GPU memory safety, GPU + SSD architecture co-design, and distributed workloads on Multi-GPU systems.

EDUCATION

Georgia Institute of Technology   Atlanta, GA, USA
Ph.D. in Computer Science   Jan. 2024 – Present
Advisor: Hyesoon Kim

Korea Advanced Institute of Science and Technology (KAIST)   Daejeon, Korea
B.S. Major in Electrical Engineering, Minor in Mathematical Sciences   Feb. 2018 – Feb. 2024
GPA: 4.05/4.30 (*Summa Cum Laude*)

EXPERIENCE

AMD RAD (Research and Advanced Development)   Santa Clara, CA, USA
Research Associate at Advanced Memory Team   May. 2025 – Aug. 2025

Proposed a near-zero-cost algorithmic improvement for future chiplet-based GPU architectures, minimizing HBM traffic during end-to-end LLM inference and training. Modified PyTorch API, `ATen`'s tensor operators, and memory allocation in the `c10` library for implementation and evaluation.

RESEARCH PROJECTS

Georgia Tech HPArch Lab   Atlanta, GA, USA
Graduate Research Assistant (Advisor: Hyesoon Kim)   Jan. 2023 – Present

– **GPU Simulation & Performance Modeling**: Proposed statistical kernel-sampling methodology for accelerating cycle-level GPU simulations on ML/LLM workloads [1], [2], achieving $< 1\%$ sampling error.

– **GPU Memory Safety**: Designed and evaluated LMI [3], a novel fine-grained hardware bounds-checking solution for GPUs, along with under 1% performance overhead in most GPU benchmarks.

– **GPU-SSD architecture co-design**: Developed a GPU-SSD integrated simulator [link] for evaluating adaptive GPU block scheduling and address mapping policies on co-designed architectures [4].

– **Open-source GPU Simulator**: Added SASS-level tracer for Macsim to run workloads on latest CUDA versions [link], utilized NVBit and CUDA Runtime APIs.

– **Vortex 2.0**: Participated in designing and evaluating the next generation of Vortex: an open-source hardware and software project to support GPGPU based on RISC-V.

KAIST INALab   Daejeon, Korea
Undergraduate Research Assistant (Advisor: Dongsu Han)   Jul. 2021 – Aug. 2022

– **Scene-clustered Superresolution network Training**: Developed and evaluated SR-Net, a content-aware video delivery algorithm using video scene clustering, achieving a +5.8dB PSNR gain over prior methods with the same resource usage by utilizing ONNX and TensorRT.

Publications

[1] **Euijun Chung**, Seonjin Na, Sung Ha Kang, and Hyesoon Kim, "Swift and trustworthy large-scale gpu simulation with fine-grained error modeling and hierarchical clustering", in *2025 58th IEEE/ACM International Symposium on Microarchitecture* (*MICRO*), IEEE, 2025.

[2] **Euijun Chung**, Seonjin Na, and Hyesoon Kim, "Allegro: GPU simulation acceleration for machine learning workloads", in *Machine Learning for Computer Architecture and Systems 2024* (*MLArchSys, co-located with ISCA*).

[3] Jaewon Lee, **Euijun Chung**, Saurabh Singh, Seonjin Na, Yonghae Kim, Jaekyu Lee, and Hyesoon Kim, "Let-me-in: (still) employing in-pointer bounds metadata for fine-grained GPU memory safety", in *2025 IEEE International Symposium on High-Performance Computer Architecture* (*HPCA*).

[4] Xueyang Liu, Seonjin Na, **Euijun Chung**, Jiashen Cao, Jing Yang, and Hyesoon Kim, "Contention-aware gpu thread block scheduler for efficient gpu-ssd", *IEEE Computer Architecture Letters*, 2025.

[5] Huanzhi Pu, Rishabh Ravi, Shinnung Jeong, Udit Subramanya, **Euijun Chung**, Jisheng Zhao, Chihyo Ahn, and Hyesoon Kim, "Hardware vs. software implementation of warp-level features in vortex risc-v gpu", in *OSSMPIC - Open Source Solutions for Massively Parallel Integrated Circuits* (*Co-located with DATE*), 2025.

[6] Myoung Jae Lee and **Euijun Chung**, "Experimental analysis on the 0 dimensional plasma model in an inductively coupled plasma (ICP)", in *2016 New Physics: Sae Mulli*, 66:1183–1189.

Teaching

- **Teaching Assistant for CS 8803 - GPU Hardware & Software**   Summer 2024, Fall 2025
  Developed a light-weight GPU architecture simulator used in two course programming assignments.
- **Tutor in Freshman Tutoring Program**   Fall 2021, Spring 2022, Fall 2022, Fall 2023
  Tutored Calculus II (Vector Calculus) to KAIST freshmen through weekly lectures and office hours.

Skills

- **Programming**: C/C++, CUDA, Python, C#
- **Machine learning frameworks**: cuBLAS, Pytorch (`ATen` and `c10`), vLLM
- **Tools and simulators**: NVBit, Macsim, ASTRA-Sim, gem5, MATLAB, ARM Mbed, Unity, LabWindows/CVI
- **Languages**: English (Proficient), Korean (Native), Japanese (Proficient)

Scholarships and Honors

- **Gem5 Bootcamp** Attendee (Full Travel Grant)   Jul.–Aug. 2024
  Attended the gem5 Bootcamp at UC Davis as a recipient of a full travel grant.
- **ISCA 2023 uArch Workshop** Full Grant Recipient   Jun. 2023
  Accepted as a full travel grant recipient for the 5th Undergrad Architecture Mentoring Workshop at ISCA 2023.
- **KOSAF** (Korea Student Aid Foundation) National Science & Technology Scholarship   2022 – 2024
  Awarded scholarship for being an outstanding undergraduate student in engineering.
- **Dean's List** for KAIST EE   Fall 2022
  Awarded academic honor to students who have achieved exceptional academic performance (top 3%).

Extracurricular Activities & Experiences

- **AI Competition for Agricultural Commodity Price Prediction**   Fall 2022
  Participated in Nongnet AI price prediction competition utilizing a comprehensive 10-year agricultural transaction database. Achieved a top 13% ranking out of 69 participating teams.
- **Republic of Korea Air Force (ROKAF)**   Aug. 2019 – May 2021