

# Computer System Architecture Lab

**Gunjae Koo**

Assistant Professor

Department of Computer Science and Engineering



**KOREA**  
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# Principal Investigator

## ■ Gunjae Koo (구건재)

- Assistant Professor  
Department of Computer Science and Engineering  
Korea University
- Assistant Professor, Hongik University
- Research Intern, Intel
- Senior Research Engineer, LG Electronics
  
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# Lab Members

## PhD Students



Jongmin Lee

PhD Student

## Master Students



Inje Kim

Master Student



Hunjong Lee

Master Student



Boyoung Park

Master Student



Hyunwoo Moon

Master Student



Jonghyun Jeong

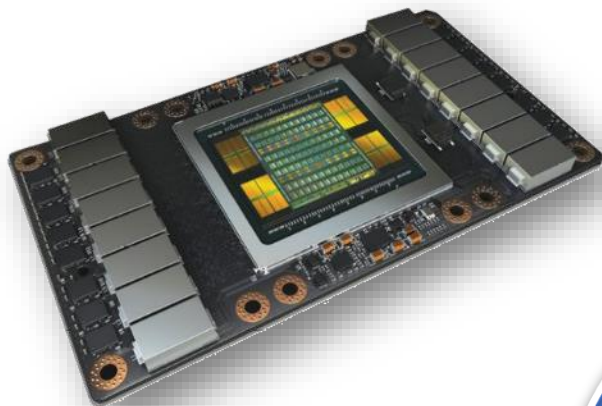
Master Student



Seungho Jung

Master Student

# Research



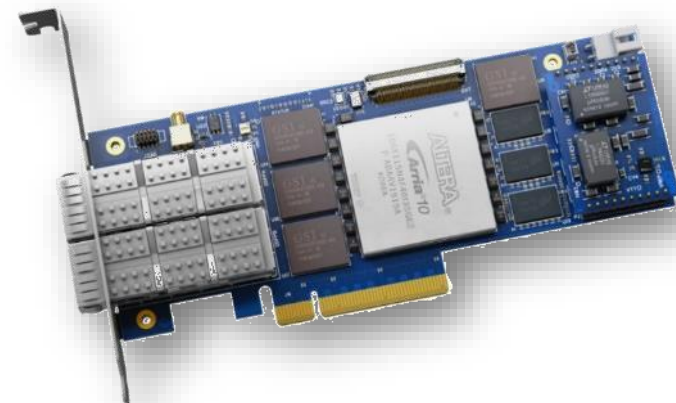
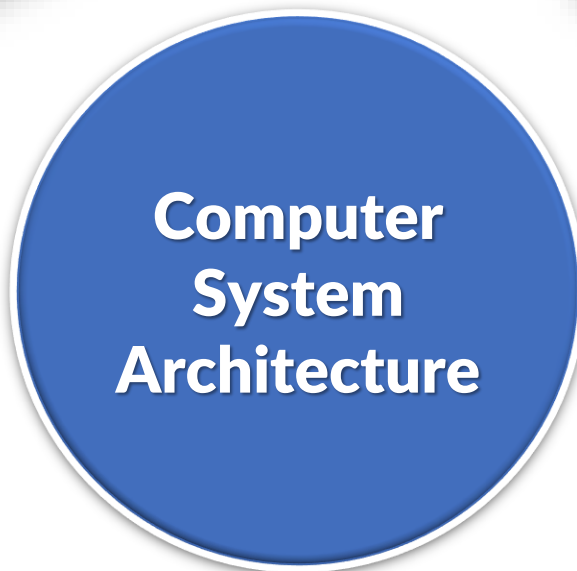
Processor Architecture



Intelligent Storage Systems



Memory Systems



FPGA & Accelerator



Secure Processor Architecture

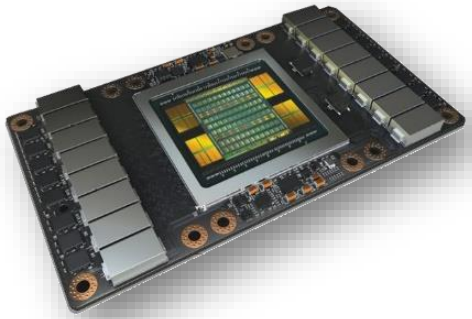
# Funded Projects

- 대규모 그래프 구조의 신경망 처리를 위한 효율적인 프로세서 및 메모리 구조에 관한 연구 (NRF 우수신진, 최초혁신 실험실)
  - 컴퓨터 프로세서의 구조적 보안 취약점 검증 및 공격 탐지 대응 (IITP)
  - 기계학습 어플리케이션을 위한 Near Data Processing 시스템에 대한 연구 (NRF, completed)
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- BK21 컴퓨터학 교육연구단
  - 융합보안석사과정
  - ICT명품인재양성

## Sponsors



# Publications



Victim Cache Using Idle RF (*ISCA '19*)

Access Pattern-Aware Cache Management (*ISCA '17*)

Revealing Critical Loads (*IISWC '15*)

CTA-Aware Prefetching and Scheduling (*IPDPS '18*)

SIMT Runahead Execution (*HPCA '16*)

Register File Data Compression (*ISCA '15, TC '17*)



Graph Semantic SSD (*ISCA '19*)

Dynamic Near Data Processing (*MICRO '17*)

In-Storage Indexing Mechanism (*TC '22*)



# Publications



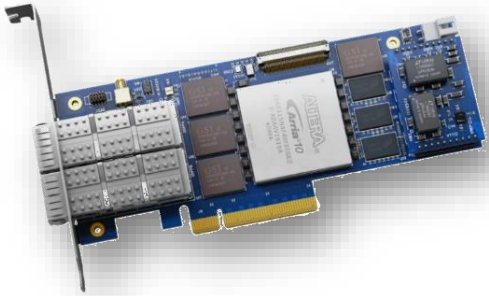
Secure OoO Processor Architecture (**DATE '22**)

Defense against Cache Attacks (**MDPI Electronics '21**)

Secure GPU Architecture (**KSC '21**)



Resilient DRAM Systems (**DATE '22**)



GCN Inference Characteristics (**KCC '21, KSC '21**)

Audio Compression Accelerator (**IEIE '20**)

**Your work will appear here**

# Prospective Members

- We are recruiting self-motivated students
- Related courses
  - **Computer architecture**
  - Computer system design
  - Operating systems
  - Algorithms & data structures
- Skills
  - Programming languages (C/C++)
  - Hardware description languages (SystemVerilog, VHDL)



*Thank you*

Questions?

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