Dongha Yoon

Virginia Tech Ph.D. Student
Next-generation Embedded/Computer System Software Technology lab
(NECSST lab, Prof. Sam. H Noh)
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EDUCATION

Ulsan National Institute of Science and Technology (UNIST), Feb. 2015 ~ Aug. 2022
Department of Computer Science and Engineering
BS of Computer Science and Engineering (Major) and Mechanical Engineering (Minor)
GPA: [Major: 3.51/4.3, Overall: 3.21/4.3]

Ulsan National Institute of Science and Technology (UNIST), Aug. 2022 ~ Jan. 2023 [Retired*]
Department of Computer Science and Engineering
MS of Computer Science and Engineering
* My advisor (Dr. Sam H. Noh) moved to Virginia Tech, so I followed him.

Virginia Polytechnic Institute and State University (Virginia Tech), Jan. 2023 ~
Department of Computer Science
Ph.D. of Computer Science and Application
GPA: 4.0/4.0

RESEARCH INTERESTS

- Computer System Software
  - Storage system
  - Large-scale File system
  - Virtualization (KVM)
- Compute Express Link (CXL)

RESEARCH EXPERIENCE

- **Research Intern** (Dec. 2020 ~ Aug. 2022)
  Next-generation Embedded/Computer System Software Technology (NECSST, Prof. Sam. H Noh), UNIST, Korea
  ✓ Studied Persistent Memory Utilization on Key-Value Stores
  ✓ Studied Key-Value Store Optimization for ZNS SSD

- **Development of Next-Generation Computing Technology for Hyper-Composable Data Center**
  (Jul. 2021 ~ Dec. 2022), Funded by Korea Ministry of Science and ICT (MSIT)

- **Efficient File System for Disaggregated Heterogeneous Storage Systems**
  (Sep. 2021 ~ Aug. 2022), Funded by SK Hynix

- **FEMU-CXL** (May. 2023 ~)
  Expanding FEMU (NVMe SSD Emulator, https://github.com/vtess/FEMU) features for emulating CXL SSD devices
  ✓ Implemented CXL-SSD device emulation
  ✓ Modified QEMU's (v8.0.5) CXL type3 device emulation
  ✓ Modified Linux kernel's (v6.4.6) KVM module for providing accurate performance characteristics

COURSE PROJECTS

[Undergraduate Course]
PintOS: Operating Systems course project, Spring 2021

- Project1: Thread scheduling
- Project2: Basic thread structure and system call (open, exec, exit, open …)
- Project3: Virtual memory (paging & swap mechanism)
- Project4: Filesystem (directory structure, block cache)

Turtlebot3: Introduction to Robotics course project, Spring 2022

- SLAM-based navigation and YOLO-based object detection/operation

[Graduate Course]
OpenDwarfs-OpenMP: Advanced Parallel Computation course project, Spring 2023

- Reimplemented some of OpenDwarfs (OpenCL-based) benchmarks with OpenMP

GBDI: Computer Architecture course project, Spring 2023

- Implemented GBDI compression algorithm in C and evaluate compression ratio of each policies

microC: Translator Design and Construction course project, Fall 2023

- Designed a new (C-like) programming language and build its compiler

NOVA with real PMEM: Advanced topics in System course project, Fall 2023

- Reproduced evaluations introduced in NOVA filesystem paper (FAST'16) with real Intel PMem device

AWARDS AND HONORS

2015 ~ 2016	UNIST Dream Scholarship, UNIST, Korea
2015 ~ 2016	National Scholarship Type1, KOSAF, Korea
2015 ~ 2016	Academic Performance Scholarship UNIST, Korea
2020 ~ 2022	UNIST Dream Scholarship, UNIST, Korea
2020 ~ 2022	National Scholarship Type1, KOSAF, Korea
2021 ~ 2022	Academic Excellence Scholarship, UNIST, Korea

OTHER EXPERIENCES

Teaching Experiences

(Experience at Virginia Tech)

2024 Spring	CS3214 Computer Systems GTA

(Experience at UNIST)

2022 Fall	CSE261 Computer Architecture TA

(Personal experiences at UNIST, non-profit)

2015 Spring	General Physics exam preparation lecture for classmates
2016 Summer	Engineering programming (basic C++) preview class for freshmen
2017 Spring	Engineering programming class for freshmen

(Personal experiences at private academy)

Jul 2015 ~ Aug 2016	Assistant math teacher for middle school students (part-time job)
Dec 2016 ~ Feb 2017	Taught Advanced Physics for high school students (part-time job)
May 2017 ~ Oct 2017	Taught Math for K-12 students (full-time job)
Sep 2020 ~ Feb 2021	Taught Science for middle/high school students (part-time job)
Jun 2022 ~ Dec 2022	Taught Python programming for middle school students (part-time job)