Dongha Yoon

Virginia Tech Ph.D. Student
Next-generation Embedded/Computer System Software Technology lab
(NECSST lab, Prof. Sam. H Noh)
540-230-3485
dongha@vt.edu

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

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
  ✓ Preparing paper submission at ATC/OSDI'24

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)

ZZAPFLIX: Software Engineering course project, Spring 2021

- Simple, Netflix-like web application

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 (continuing)

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

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

(Official 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)