Sujin Park

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INTERESTS

Operating Systems, File/Storage Systems, Virtualization

EDUCATION

Georgia Institute of Technology — Atlanta, GA
Ph.D. in Computer Science *(Advisor: Prof. Taesoo Kim)* — Aug. 2019 – present

Sungkyunkwan University (SKKU) — Suwon, South Korea
B.S. in Software Engineering — Mar. 2014 – Feb. 2019

RESEARCH EXPERIENCE

Systems Software & Security Lab, Georgia Tech — Atlanta, GA
Research Assistant (Advisor: Prof. Taesoo Kim) — Aug. 2019 – present

- Currently working on introducing an user-programmable scalable lock design.

Samsung Research — Seoul, South Korea
Research Intern — Jan. 2022 – May. 2022

- Working with System Security Team

Robust Scalable Systems Software Lab, EPFL — Lausanne, Switzerland
Visiting Ph.D. Student (Advisor: Prof. Sanidhya Kashyap) — May. 2021 – Dec. 2021

- Designed and implemented a framework that allows a privileged userspace process to safely modify kernel locks on the fly without recompiling the existing code base [1, 2].

UCARE Lab, University of Chicago — Chicago, IL
Research Collaborator (Advisor: Prof. Haryadi Gunawi) — Mar. 2019 – Aug. 2019

- Worked on a project proposing a tail-evading flash array with predictable performance by avoiding tail latency with reconstructed late requests. Implemented write buffer cache and flush mechanism in flash emulation platform.

Distributed Computing Lab, SKKU — Suwon, South Korea
Full-time Research Intern (Advisor: Prof. Young Ik Eom) — Mar. 2017 – Feb. 2019

- Designed and conducted original research in the area of virtualization and introduced a novel virtual machine memory monitoring tool which focuses on classifying shared memory according to their characteristics [3, 4]
- Conducted research in the area of file systems, especially on Flash Translation Layer and I/O performance analysis using OpenSSD and various benchmarks [6].

Parallel Systems Architecture Lab, EPFL — Lausanne, Switzerland
Summer Intern (Advisor: Prof. Babak Falsafi) — Jun. 2018 - Aug. 2018

- Participated in QFlex project, a computer architecture simulation of multi-node system.
- Designed and implemented debugging tool for simulation. Parsed log files of the simulation, built database and systematized them to enable process tracking and error detection.

Machine to Machine Lab, Purdue University — West Lafayette, IN
Capstone Design Project (Advisor: Prof. Eric Matson) — Sep. 2017 - Dec. 2017

- Participated in project on multi-agent system with Argonne National Laboratory. Proposed a goal distribution strategy for distributed multi agent systems [5]. The approach was tested and verified using StarCraft II API and broker communication model.

PUBLICATIONS

[1] **Application-Informed Kernel Synchronization Primitives**
Sujin Park, Diyu Zhou, Yuchen Qian, Irina Calciu, Taesoo Kim and Sanidhya Kashyap.
In *Proceedings of the 16th USENIX Symposium on Operating Systems Design and Implementation (OSDI'22)*, Carlsbad, CA, Jun. 2022.

[2] **Contextual Concurrency Control.**
Sujin Park, Irina Calciu, Taesoo Kim and Sanidhya Kashyap.
In *Proceedings of the 18th Workshop on Hot Topics in Operating Systems (HotOS XVIII)*, virtual, Jun. 2021.

[3] **Introspection of Virtual Machine Memory Resource in the Virtualized Systems.**
Minho Lee, **Sujin Park**, Yongju Song, and Young Ik Eom.
In *Proceedings of the IEEE International Conference on Big Data and Smart Computing(BigComp 2019)*, Kyoto, Japan, Feb. 2019

[4] **Real-time Memory Share Monitoring for Memory Efficiency in Virtualized Systems.**
Sujin Park, Yongju Song, and Young Ik Eom.
In *Proceedings of the Korea Computer Congress(KCC 2018)*, Jeju, South Korea, Jun. 2018

[5] **Collaborative Goal Distribution in Distributed Multiagent Systems.**
Sujin Park, Sanguk Park, Hyeonggun Lee, Minji Hyun, Eunsuh Lee, Jeonghyeon Ahn, Lauren Featherstun, Yongho Kim and Eric Matson.
In *Proceedings of the Second IEEE International Conference on Robotic Computing (IRC 2018)*, Laguna Hills, CA, Feb. 2018

[6] **I/O Performance Analysis by Page Size in SSD Devices.**
Sujin Park, Yongju Song, and Young Ik Eom.
In *Proceedings of the Korea Computer Congress(KCC 2017)*, Jeju, South Korea, Jun. 2017

TEACHING

Teaching Assistant, Georgia Tech — Spring 2020
CS3210 – Designing Operating System
• Building an operating system in Rust. Targets AArch64(ARM) architecture and tested on RPi3.

Teaching Assistant, SKKU — Fall 2018
Problem Solving and Algorithm course

HONORS AND AWARDS

Grace Hopper Conference Travel Grant — 2019
Graduate Study Fellowship, Chungnam State Government, South Korea — 2019-2021
Women Techmakers Scholars (Anita Borg Scholars), Google — 2018
(acceptance rate: 0.3%=73/25000)
Research Assistantship and Travel Grant, EPFL *(acceptance rate: 2-3%)* — 2018
Dean's List, Sungkyunkwan University *(awarded four consecutive semesters)* — 2016-2018
Honor Scholarship, Sungkyunkwan University — **2014-2018**
K-SW Purdue Scholarship, South Korean Government (IITP) — 2017
Best Paper, Korea Computer Congress (KCC) — 2017
Impact Award in Develop with Google Final Contest — 2017
Finalist of Samsung Collegiate Programming Cup — 2016
1st place in Information Security Idea Contest, Sungkyunkwan University — 2015

PATENTS

Young Ik Eom, Yongju Song, **Sujin Park**. Real-time Memory Share Monitoring for Virtualized Systems. KR-Patent 10-2018-0164420

SELECTED TALKS

Contextual Concurrency Control, eBPF Summit — Aug. 2021

SELECTED PROJECTS

Develop with Google Jan. 2018 - Feb. 2018
Student Software Engineer Google, South Korea
Participated in weekly session and dealt with several software topics and skills, such as Android Things, static/dynamic linker, firebase and technical interviews.

Develop with Google Jan. 2017 - Feb. 2017
Student Software Engineer Google, South Korea
Developed Chrome extension using HTML, JavaScript, CSS, jQuery, and Chrome extension API to help manage multiple tabs. Proposed and implemented features such as 'tab directory' and 'tab suspending'.

TECHNICAL SKILLS

Languages

- Advanced – C/C++, Python, Rust, Shell script
- Moderate – Java, HTML, CSS, JavaScript, Assembly Language (X86-64)

Software Skills

- Operating System – **Linux Kernel Development**
- Virtualization – KVM, QEMU, Docker
- Storage device – OpenSSD Jasmine Firmware, SSD Simulators
- Database – MySQL, Neo4j
- Performance Test – Various benchmarks for database, storages on Linux systems