Chanyoung Park

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Education

Ulsan National Institute of Science and Technology (UNIST) — Ulsan, South Korea
Combined Master and PhD in Computer Science Engineering — *Mar. 2022 – Present*

Ulsan National Institute of Science and Technology (UNIST) — Ulsan, South Korea
Bachelor of Computer Science and Engineering — *Mar. 2015 – Feb 2022*

Publications

[1] **Efficient Use-After-Free Prevention with Pooling, OS-assisted, and Opportunistic Page-Level Sweeping**. Chanyoung Park, Yeongjun Kwak, and Hyungon Moon. In *IEEE Transactions on Dependable and Secure Computing (TDSC), 2025.*

[2] **Defeating Use-After-Free Bugs Using Memory Sweeper Without Stop-the-World**. Junho Ahn, KangHyuk Lee, Chanyoung Park, Hyungon Moon, and Youngjin Kwon. In *IEEE Symposium on Security and Privacy "Oakland" (SP), San Diego, CA, USA, May 2025.*

[3] **Selective On-Device Execution of Data Dependent Read I/Os**. Chanyoung Park, Minu Chung, and Hyungon Moon. In *USENIX Conference on File and Storage Technologies (FAST), Santa Clara, CA, USA, February 2025.*

[4] **Efficient Use-After-Free Prevention with Opportunistic Page-Level Sweeping**. Chanyoung Park and Hyungon Moon. In *Network and Distributed System Security Symposium (NDSS), San Diego, CA, USA, February 2024.*

Research Interest

Memory Management, System Security, Operating System, and Program Analysis

Projects

Memory Allocator for Temporal Safety | *C/C++, Linux Kernel* — Feb. 2020 – Present

- Developed and published "Operating System Support-based Prevention Mechanism for Use-after-Free Attacks on the Glibc Memory Allocator", called *MarKern* in *Journal of KIISE*
- Developed and published "Efficient Use-After-Free Prevention with Opportunistic Page-Level Sweeping", called *HushVac* in *Network and Distributed System Security Symposium (NDSS)* 2024
- Developed and published "Defeating Use-After-Free Bugs Using Memory Sweeper Without Stop-the-World" called *SwiftSweeper* in *IEEE Symposium on Security and Privacy "Oakland" (SP)*
- Developed and published "Efficient Use-After-Free Prevention with Pooling, OS-assisted, and Opportunistic Page-Level Sweeping" called *HushVac+* in *IEEE Transactions on Dependable and Secure Computing (TDSC)*

In-Storage Computing | *C/C++, Linux Kernel* — Jan. 2024 – Feb. 2025

- Developed and published "Selective On-Device Execution of Data-dependent Read I/Os", called *SODE* in *USENIX Conference on File and Storage Technologies (FAST)* 2025, as 1st author

Program Analysis | *LLVM, C/C++, Static Value-Flow analysis (SVF)* — Nov. 2023 – Feb. 2024

- Developed and published "Analysis of Memory Allocator Call sites Used Only Within The Stack Using SVF" in *KIPS ACK* 2024, as 2nd author

Experience

Artifact Evaluation Program Committee 2025, Fall Cycle
ACM European Conference on Computer Systems (EuroSys) *Rotterdam, Netherlands*

- Evaluated artifacts of two papers

Teaching Assistant Mar 2022 – July 2024
Ulsan National Institute of Science and Technology (UNIST) *Ulsan, South Korea*

- Software Hacking and Defense (2022, Spring)
- Building Customized Computers (2022, Fall)
- Advanced Programming (2023, Spring)
- Principles of Program Language (2023, Fall)
- Operating System (2024, Spring)

Undergraduate Research Assistant Feb 2020 – Feb. 2022
Ulsan National Institute of Science and Technology (UNIST) *Ulsan, South Korea*

- Developed operating system support-based prevention mechanism for Use-after-Free attacks on the Glibc memory allocator
- Published a domestic paper in Journal of KIISE

Invited Talks

1) Efficient Use-After-Free Prevention with Opportunistic Page-Level Sweeping
Samsung Security Tech Forum (SSTF) 2024, Sep. 2024