

# Hyungon Moon (문현곤)

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Computer Systems Security Lab  
Department of Computer Science and Engineering  
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## EDUCATION

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**Seoul National University**, Seoul, Korea. . . . . Mar 2010 – Feb 2017

Ph.D. in Electrical Engineering and Computer Science

Thesis: Hardware Techniques against Memory Corruption Attacks

Advisor: Yunheung Paek

**Seoul National University**, Seoul, Korea. . . . . Mar 2005 – Feb 2010

B.S. in Electrical Engineering

B.S. in Mathematical Science

*Cum Laude*

**Gyeongnam Science High School**, Jinju, Korea. . . . . Mar 2003 – Feb 2005

## EMPLOYMENT HISTORY

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**Ulsan National Institute of Science and Technology (UNIST)**, Ulsan, Korea . . . . Aug 2018 – Current

Associate Professor . . . . . Sep 2022 – Current

Assistant Professor . . . . . Aug 2018 – Aug 2022

**Georgia Institute of Technology**, Atlanta, GA, USA . . . . . May 2017 – Aug 2018

Postdoctoral Fellow

Advisor: Taesoo Kim

## RESEARCH INTERESTS

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Systems Security, Operating Systems, Computer Architecture, Program Analysis, Privacy

## PUBLICATIONS

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### Summary

Publication in Top CS Conferences							Total
S&P	Security	CCS	NDSS	ATC	FAST	ICCAD	
2	4	1	1	1	1	2	<b>12</b>

### Refereed Publications

- [1] **[SEC24], Lohen: Layer-wise optimizations for neural network inferences over encrypted data with high performance or accuracy.** Kevin Nam, Youyeon Joo, Dongju Lee, Seungjin Ha, Hyunyoung Oh, , Hyungon Moon\*, and Yunheung Paek\*. In *USENIX Security Symposium (Security)*, August 2025. **(KIISE S, BK21 IF: 4, CSRankings).**

- [2] **[SEC24], Metasafe: Compiling for protecting smart pointer metadata to ensure safe rust integrity.** Martin Kayondo, Inyoung Bang, Yeongjun Kwak, Hyungon Moon\*, and Yunheung Paek\*. In *USENIX Security Symposium (Security)*, August 2024.  
(KIISE S, BK21 IF: 4, CSRankings).
- [3] **[NDSS24], 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, California, USA, February 2024.  
(KIISE S, BK21 IF: 2, CSRankings).
- [4] **[SoCC23], Kvsev: A secure in-memory key-value store with secure encrypted virtualization.** Junseung You, Kyeongryong Lee, Hyungon Moon\*, Yeongpil Cho, and Yunheung Paek\*. In *ACM Symposium on Cloud Computing (SoCC)*, Santa Cruz, California, USA, October 2023.  
(KIISE A, BK21 IF: 1).
- [5] **[ICCAD23], Hyperdimensional computing as a rescue for efficient privacy-preserving machine learning-as-a-service.** Jaewoo Park, Chenghao Quan, Hyungon Moon\*, and Jongeun Lee\*. In *International Conference on Computer-Aided Design (ICCAD)*, San Francisco, California, USA, October 2023. URL <https://arxiv.org/abs/2310.06840>.  
(KIISE A, BK21 IF: 3, CSRankings).
- [6] **Protecting Kernel Code integrity with PMP on RISC-V.** Seon Ha and Hyungon Moon\*\*. In *World Conference on Information Security Applications (WISA)*, August 2023.
- [7] **[SEC23], Trust: A compilation framework for in-process isolation to protect safe rust against untrusted code.** Inyoung Bang, Martin Kayondo, Hyungon Moon\*, and Yunheung Paek\*. In *USENIX Security Symposium (Security)*, August 2023.  
(KIISE S, BK21 IF: 4, CSRankings).
- [8] **Kernel code integrity protection at the physical address level on risc-v.** Seon Ha, Minsang Yu, Hyungon\*\* Moon, and Jongeun Lee. *IEEE Access (Access)*, pages 1–1, June 2023. doi: 10.1109/ACCESS.2023.3285876.
- [9] **[ICCAD22], Accelerating n-bit operations over tffe on commodity cpu-fpga.** Kevin Nam, Hyunyoung Oh, Hyungon Moon\*, and Yunheung Paek\*. In *International Conference on Computer-Aided Design (ICCAD)*, San Diego, California, USA, October 2022.  
(KIISE A, BK21 IF: 3, CSRankings).
- [10] **[ESORICS22], Precise extraction of deep learning models via side-channel attacks on edge/endpoint devices.** Younghan Lee, Sohee Jun, Yungi Cho, Woorim Han, Hyungon Moon\*, and Yunheung Paek\*. In *European Symposium on Research in Computer Security (ESORICS)*, 2022.  
(KIISE A, BK21 IF: 2).
- [11] **[DATE22], XtenStore: Extensible Secure In-memory Key-Value Store on a Hybrid x86-FPGA System.** Hyunyoung Oh, Maja Malenko, Dongil Hwang, Myunghyun Cho, Hyungon Moon\*, Marcel Baunach, and Yunheung Paek\*. In *Design, Automation & Test in Europe (DATE)*, 2022. Interactive Presentation,  
(KIISE A, BK21 IF: 1).
- [12] **[FAST22], A Log-Structured Merge Tree-aware Message Authentication Scheme for Persistent Key-Value Stores.** Igjae Kim, J. Hyun Kim, Minu Chung, Hyungon Moon\*\*, and Sam H. Noh. In *Proceedings of the 22nd USENIX Conference on File and Storage Technologies (FAST)*, February 2022.  
(KIISE S, BK21 IF: 3, CSRankings).
- [13] **[TMC], Embassy: A Runtime Framework to Delegate Trusted Applications in an ARM/FPGA Hybrid System.** Dongil Hwang, Sanzhar Yeleuov, Jiwon Seo, Minu Chung, Hyungon Moon\*, and Yunheung Paek\*. *IEEE Transactions on Mobile Computing (TMC)*, May 2023.  
(SCI).
- [14] **[ATC19], libmpk: Software Abstraction for Intel Memory Protection Keys (Intel MPK).** Soyeon Park, Sangho Lee, Wen Xu, Hyungon Moon, and Taesoo Kim. In *Proceedings of the 2019 USENIX Annual Technical Conference (ATC)*, Renton, WA, July 2019.

(KIISE S, BK21 IF: 3, CSRankings).

- [15] **[SP19], Fuzzing File Systems via Two-Dimensional Input Space Exploration.** Wen Xu, Hyungon Moon, Sanidhya Kashyap, Po-Ning Tseng, and Taesoo Kim. In *Proceedings of the 40th IEEE Symposium on Security and Privacy (Oakland)*, San Francisco, CA, May 2019.  
(KIISE S, BK21 IF: 4, CSRankings).
- [16] **[TDSC], KI-Mon ARM: A Hardware-assisted Event-triggered Monitoring Platform for Mutable Kernel Object.** Hojoon Lee, Hyungon Moon, Ingoo Heo, Daehee Jang, Jinsoo Jang, Kihwan Kim, Yunheung Paek\*, and Brent Byunghoon Kang\*. *IEEE Transactions on Dependable and Secure Computing (TDSC)*, 2019.  
(SCI).
- [17] **[RAID18], Hardware-Assisted Randomization of Data.** Brian Belleville\*\*\*, Hyungon Moon\*\*\*, Jangseop Shin, Dongil Hwang, Joseph Michael Nash, Seonhwa Jung, Yeoul Na, Stijn Volckaert, Per Larsen, Yunheung Paek\*, and Michael Franz. In *Proceedings of the 21st International Symposium on Research in Attacks, Intrusions and Defenses (RAID)*, Heraklion, Crete, Greece, September 2018.  
\*\*\*: joint first authors, contributed equally,  
(KIISE A, BK21 IF: 2).
- [18] **[TODAES], Architectural Supports to Protect OS Kernels from Code-Injection Attacks and Their Applications.** Hyungon Moon, Jinyong Lee, Dongil Hwang, Seonhwa Jung, Jiwon Seo, and Yunheung Paek. *ACM Transactions on Design Automation of Electronic Systems (TODAES)*, 23(1), October 2017.  
(SCI).
- [19] **[TDSC], Detecting and Preventing Kernel Rootkit Attacks with Bus Snooping.** Hyungon Moon, Hojoon Lee\*\*\*, Ingoo Heo, Kihwan Kim, Yunheung Paek, and Brent Byunghoon Kang. *IEEE Transactions on Dependable and Secure Computing (TDSC)*, 14(2), March 2017. \*\*\*: co-first author,  
(SCI).
- [20] **[HASP16], Architectural Supports to Protect OS Kernels from Code-Injection Attacks.** Hyungon Moon, Jinyong Lee, Dongil Hwang, Seonhwa Jung, Jiwon Seo, and Yunheung Paek. In *Proceedings of the Hardware and Architectural Support for Security and Privacy (HASP)*, 2016.
- [21] **[SP16], HDFI: Hardware-Assisted Data-Flow Isolation.** Chengyu Song, Hyungon Moon, Monjur Alam, Insu Yun, Byoungyoung Lee, Taesoo Kim, Wenke Lee, and Yunheung Paek. In *Proceedings of the 37th IEEE Symposium on Security and Privacy (Oakland)*, San Jose, CA, May 2016.  
(KIISE S, BK21 IF: 4, CSRankings).
- [22] **[JSTS], Efficient Kernel Integrity Monitor Design for Commodity Mobile Application Processors.** Ingoo Heo, Daehee Jang, Hyungon Moon, Hansoo Cho, Seungwook Lee, Brent Byunghoon Kang, and Yunheung Paek. *Journal of Semiconductor Technology and Science (JSTS)*, 15(1), February 2015.  
(SCI).
- [23] **[DATE15], Extrax: Security Extension to Extract Cache Resident Information for Snoop-based External Monitors.** Jinyong Lee, Yonje Lee, Hyungon Moon, Ingoo Heo, and Yunheung Paek. In *Proceedings of the Design, Automation & Test in Europe (DATE)*, Grenoble, France, March 2015.  
(KIISE A, BK21 IF: 2).
- [24] **[SEC13], KI-Mon: A Hardware-assisted Event-triggered Monitoring Platform for Mutable Kernel Object.** Hojoon Lee, Hyungon Moon, Daehee Jang, Kihwan Kim, Jihoon Lee, Yunheung Paek, and Brent Byunghoon Kang. In *Proceedings of the 22th USENIX Security Symposium (Security)*, Washington, DC, August 2013.  
(KIISE S, BK21 IF: 4, CSRankings).
- [25] **[CCS12], Vigilare: Toward Snoop-based Kernel integrity Monitor.** Hyungon Moon, Hojoon Lee, Jihoon Lee, Kihwan Kim, Yunheung Paek, and Brent Byunghoon Kang. In *Proceedings of the 19th ACM Conference on Computer and Communications Security (CCS)*, Raleigh, NC, October 2012.  
(KIISE S, BK21 IF: 4, CSRankings).

## Patents

- [26] **Apparatus and Method for Deallocating Memory Area Dynamically Allocated**, Hyungon Moon, Chanyoung Park, Jaehyu Lee, and Daeyeon Kim. February 2023. KR Patent No. 10-2023-0035857, Applied.
- [27] **Secure computing device and method for key value store using log structured merge tree**, Hyungon Moon, Sam H. Noh, Igjae Kim, J. Hyun Kim, and Minu Chung. February 2023. PCT/KR2023/002276, Applied.
- [28] **Electronic device and method for controlling the operation of the kernel code region**, Hyungon Moon Seon Ha. February 2023. KR Patent No. 10-2022-0110820, Applied.
- [29] **Secure computing device and method for key value store using log structured merge tree**, Hyungon Moon, Sam H. Noh, Igjae Kim, J. Hyun Kim, and Minu Chung. February 2022. KR Patent No. 10-2022-0021722, Applied.
- [30] **Snoop-based kernel integrity monitoring apparatus and method thereof**, Yunheung Paek, Brent Byunghoon Kang, Hyungon Moon, Hojoon Lee, Jihoon Lee, and Kihwan Kim. January 2017. US Patent No. S9542557, Granted.
- [31] **Hardware-based detection of kernel code injection attack apparatus and method thereof**, Yunheung Paek, Hyungon Moon, and Jinyong Lee. September 2016. Republic of Korea Patent No. 1016586410000, Granted.

## Domestic

- [32] **Extracting instruction set architecture semantics from a processor register-transfer level**. Seon Ha and Hyungon Moon\*\*. *Journal of KIISE (JOK)*, 2023.
- [33] **An Operating System Support-based Prevention Mechanism for Use-After-Free Attacks on the Glibc Memory Allocator**. Chanyoung Park, Jaehyu Lee, Daeyeon Kim, and Hyungon Moon\*\*. *Journal of KIISE (JOK)*, 2023.
- [34] **FunRank: Finding 1-day Vulnerabilities with Call-site and Data-flow Analysis**. Jaehyo Lee, Jihun Baek, and Hyungon Moon\*\*. *Journal of The Korea Institute of Information Security and Cryptology (JKIISC)*, 2023.
- [35] **Funrank: Finding 1-day vulnerabilities with data-flow analysis**. Jaehyu Lee, Jihun Baek, and Hyungon Moon\*. In *Korea Software Congress (KSC)*, 2022. Distinguished Paper Presentation Award.
- [36] **Extracting isa semantics from a processor rtl**. Seon Ha and Hyungon Moon\*. In *Korea Software Congress (KSC)*, 2022. Best Paper Award.

## SERVICES

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### Program Committee

- 2025 USENIX Security Symposium (SEC)
- European Conference on Computer Systems (EuroSys)
- USENIX Conference on File and Storage Technologies (FAST)
- 2024 USENIX Security Symposium (SEC)
- 2023 World Conference on Information Security Applications (WISA)
- USENIX Conference on File and Storage Technologies (FAST)

### Other Conference Activities

Program Committee Chair, International Conference on Artificial Intelligence Computing and Systems (AICompS), 2024

Organizing Committee, KIISE Computer System Society Conference, 2024

Session Chair, ACM SIGOPS Asia-Pacific Workshop on Systems (APSys), 2023

Session Chair, USENIX Conference on File and Storage Technologies (FAST), 2023

#### Journal Editor

Associate Editor, Journal of Information Processing Systems, 2024

Associate Editor, KIPS Transactions on Computer and Communication Systems, 2024

#### Journal Reviewer

Journal of The Korea Institute of Information Security and Cryptology (JKIISC), 2023, 2022, 2021

IEEE Transactions on Computer, 2020

IEEE Access, 2020, 2024

#### Student Program Committee

IEEE Symposium on Security and Privacy, 2016

#### Sub-reviewer

USENIX Conference on File and Storage Technologies (FAST), 2024

Usenix Security Symposium, 2018

Usenix Annual Technical Conference, 2018

European Conference on Computer Systems, 2018

The Network and Distributed System Security Symposium, 2018

ACM Conference on Computer and Communications Security, 2017

ACM/IFIP/USENIX International Middleware Conference, 2017

Design Automation Conference, 2017

IEEE Transactions on Computers, 2016

International Workshop on Software and Compilers for Embedded Systems, 2014

IEEE International Parallel and Distributed Processing Symposium, 2013

Workshop on Synthesis And System Integration of Mixed Information technologies, 2012

#### Miscellaneous

Organizing Committee, Winter Conference on Information Security and Cryptography (CISC-W), Korea Institute of Information Security & Cryptography (KIISC), 2020

## TALKS

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### Invited Talks

- 1) Secure Data Processing on Cloud  
Workshop for Improving Information Security Skills, Jul 2024

- 2) Finding and Fixing Vulnerabilities with AI  
Workshop on Security in the Era of AI, Annual Symposium of KIPS (ASK) 2024, May 2024
- 3) Privacy-preserving Machine Learning Services  
Workshop on AI Semiconductor, Annual Conference of KIPS (ACK) 2023, Nov 2023
- 4) Confidential Outsourced Data Processing on Cloud  
Pohang University of Science and Technology (POSTECH), May 2023
- 5) Confidential Outsourced Data Processing on Cloud  
Samsung Advanced Institute of Technology, Nov 2022
- 6) Key-Value Stores on Enclave: Opportunities and Challenges  
Operating System Support for Next Generation Large Scale NVRAM (NVRAMOS), Oct 2022
- 7) Adapting Key-Value Stores for Trusted Execution Environments  
Hanyang University, Mar 2022
- 8) Recent Studies on Model Extraction Attacks and Defenses  
ETRI, Dec 2021
- 9) Trusted Execution Environments on Personal Mobile Devices for Third-parties  
Annual Conference of KIPS (ACK) 2021, Nov 2021
- 10) Hardware-based mechanisms to defeat ransomware  
ETRI, Mar 2021
- 11) Trusted Execution Environments on Personal Mobile Devices for Third-parties  
Security@KAIST, Nov 2020
- 12) Trusted Execution Environments on Personal Mobile Devices for Third-parties  
Yonsei University, Oct 2020
- 13) Understanding and exploiting hardware for secure computer systems  
ETRI, Sep 2020
- 14) Teaching a computer systems course remotely  
UNIST Workshop on Innovations in Post-pandemic Online Education, Jul 2020
- 15) libmpk: Software Abstraction for Intel Memory Protection Keys (Intel MPK)  
KIISE Computer System Society Winter Workshop, Feb 2020
- 16) Hardware Techniques for Software Security  
KIISE Korea Software Congress, Dec 2018

## OPEN SOURCE

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- |                 |   |
|-----------------|---|
| 1) MetaSafe [2] | <a href="https://github.com/cssl-unist/trust23-metsafe24">https://github.com/cssl-unist/trust23-metsafe24</a> |
| 2) HushVac [3]  | <a href="https://github.com/cssl-unist/hushvac">https://github.com/cssl-unist/hushvac</a>                     |
| 3) KVSEV [4]    | <a href="https://github.com/cssl-unist/kvsev">https://github.com/cssl-unist/kvsev</a>                         |
| 4) TRust [7]    | <a href="https://github.com/cssl-unist/trust-sec23">https://github.com/cssl-unist/trust-sec23</a>             |

- 5) PrivLock [8] <https://github.com/cssl-unist/priv-code-lock>
- 6) Tweezer [12] <https://github.com/cssl-unist/tweezer>
- 7) libMPK [14] <https://github.com/sslab-gatech/libmpk>
- 8) Janus [15] <https://github.com/sslab-gatech/janus>
- 9) HDFI [21] <https://github.com/sslab-gatech/hdfi>

## STUDENTS

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### Graduate Students

- 1) **Seon Ha** [6, 8, 36, 32] (PhD Student) Mar 2021 — Current  
(Master Student) Mar 2019 — Feb 2021
- 2) **Minu Chung** [12, 13] (Master-Phd Combined) Mar 2021 — Current  
(Undergraduate) Sep 2019 — Feb 2021
- 3) **Chanyoung Park** [3, 33] (Master-Phd Combined) Mar 2022 — Current  
(Undergraduate) Jan 2020 — Feb 2022
- 4) **Jihun Baek** [34] (Master Student) Mar 2024 — Current  
(Undergraduate) Jul 2022 — Feb 2024
- 5) **Yeongjun Kwak** [2] (Master Student) Mar 2024 — Current  
(Undergraduate) Dec 2022 — Feb 2024

### Alumni

- 1) **Jaehyu Lee** [33, 34, 35] (Master Student) Mar 2021 — Feb 2023  
(Intern, U-WURF/Remote, from Chungbuk National University) Jan 2020 — Feb 2021  
After Master: FESCARO → NSRI (국보연)

### Undergraduate Students, Interns, and Collaborators

- 1) **Jaewoo Park (w/Jongeun Lee)** [5] May 2023 — Current
- 2) **Jiwon Park** Aug 2023 — Current

### Past Undergraduate Students

- 1) **Igjae Kim** [12] (PhD Student at KAIST) Jan 2020 — Aug 2021
- 2) **Daeyeon Kim** [33] (LG CNS) Jan 2020 — Dec 2020
- 3) **Sanzhar Yeleuov** [13] (Master Student at SECCLLO) Mar 2019 — Dec 2019



## Past Undergraduate Interns

1) Marlen Raushanov	Nov 2023 — Feb 2024
2) Eungyeong Baek	Jun 2023 — Dec 2023
3) Jaewon Lee (U-WURF)	Jan 2023 — Feb 2023
4) Vyacheslav Kim	Sep 2022 — Dec 2022
5) Jinwoo Choi	Mar 2022 — Aug 2022
6) Dung Nguyen	May 2021 — Jun 2022
7) Alisher Karim	Jun 2021 — Jun 2022
8) Kasymzhan Abdyldayev	Mar 2022 — Jun 2022
9) Kaiyrlly Mukhametkarim	Jun 2021 — Dec 2021
10) Aibar Oshakbayev	Jan 2021 — Jan 2022
11) Junhyeok Song	Jan 2021 — May 2021
12) Jeongseok Nam	Jul 2020 — May 2021
13) Hwarang Kim (Naver)	Jul 2020 — Dec 2020
14) Ryeongyun Kim	Jan 2020 — Jun 2020
15) Azhar Smagulova	Mar 2019 — Jun 2019
16) Kadyrbek Narmamatov	Mar 2019 — Jun 2019
17) Sungduck Cho	Jan 2019 — Feb 2019
18) Donggi Yang	Sep 2018 — Jun 2019

## Past Visitors and Remote Interns

1) Seungho Song (U-SURF Visitor from Inha University)	Jul 2020 — Aug 2020
2) Jiwon Seo [13] (from SNU ECE)	Jan 2019 — Jan 2019
3) Dongil Hwang [11, 13] (from SNU ECE)	Jan 2019 — Jan 2019

## FUNDING

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### Ongoing

2024.07–2027.12	325,000,000 KRW	<i>AI-Based Automated Vulnerability Detection and Safe Code Generation</i> <b>IITP</b>
2024.06–2027.12	720,000,000 KRW	<i>Development of Integrated Platform for Expanding and Safely Applying Memory-Safe Languages</i> <b>IITP</b>
2024.06–2027.12	470,000,000 KRW	<i>Development of Full Lifecycle Privacy-Preserving Techniques using Anonymized Confidential Computing</i> <b>IITP</b>

2024.05–2026.12	687,500,000 KRW	<i>Binary Micro-Security Patch Technology Applicable with Limited Reverse Engineering Capability under SW Supply Chain Environments</i> <b>IITP</b>
2024.04–2026.12	216,000,000 KRW	<i>Industry-Academic Cooperation Project</i> <b>Samsung Electronics</b>
2022.06–2024.12	156,428,000 KRW	<i>Protecting the Integrity of Key-value Stores on Untrusted Memory and Storage</i> <b>National Research Foundation of Korea</b>
2021.07–2028.12	600,000,000 KRW	<i>(ITRC) Development of Next-Generation Computing Techniques for Hyper-Composable Datacenters</i> <b>IITP</b>
2021.04–2024.12	245,000,000 KRW	<i>RISC-V based Secure CPU Architecture Design for Embedded System Malware Detection and Response</i> <b>IITP</b>

## Past

2022.05–2024.04	240,000,000 KRW	<i>Industry-Academic Cooperation Project</i> <b>Samsung Electronics</b>
2022.12–2022.10	60,000,000 KRW	<i>Security Analysis of OSS-based Network Firmware</i> <b>National Security Research Institute</b>
2021.06–2022.05	47,761,000 KRW	<i>A TEE-aware design of LSM tree-based Key-Value Stores</i> <b>National Research Foundation of Korea</b>
2021.04–2021.10	60,000,000 KRW	<i>OSS-based IoT Firmware Security Analysis</i> <b>National Security Research Institute</b>
2020.09–2020.11	31,000,000 KRW	<i>Development of RISC-V CPU extensions to prevent privileged code injection attacks</i> <b>ETRI</b>
2020.06–2021.06	68,000,000 KRW	<i>Analysis, modularization and formal modeling of automated storage and retrieval system management software</i> <b>Hyundai NGV</b>
2018.09–2021.08	90,000,000 KRW	<i>Automatically identifying security-critical bugs in application-specific computing systems</i> <b>National Research Foundation of Korea</b>

## AWARDS

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Distinguished Paper Presentation Award (Jaehyo Lee), Korea Software Congress (KSC) . . . . .	2022
Best Paper Award, Korea Software Congress (KSC) . . . . .	2022
Highly Cited Paper Award, Department of ECE, SNU . . . . .	2017

Outstanding Collaborative Research Award, Department of ECE, SNU .....2016

## TEACHING

---

Advanced Operating Systems (CSE514) .....Spring 2023  
Building Customized Computers (CSE302) ..... Fall 2022  
Software Hacking and Defense (UNI204) .....Spring 2022  
Computer Architecture (CSE261) ..... Fall 2021  
Principles of Programming Languages (CSE271, CSE341) ..... Fall 2021, Fall 2020, Fall 2023  
Advanced Computer Architecture (CSE551) .....Fall 2020, Spring 2021, Spring 2022, Spring 2024  
Computer Security (CSE467) ..... Spring 2020  
Special Topics in CSE II(Software and Systems Security) (CSE481) ..... Fall 2019  
Data Structures (CSE221) .....Spring 2019  
System Programming (CSE251) ..... Spring 2019  
Special Topics in CSE II(Computer Systems Security) (CSE481) ..... Fall 2018

## RESEARCH EXPERIENCE (BEFORE PHD)

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**Seoul National University.** Seoul, Korea ..... Mar 2010 – Feb 2017

Research Assistant

Advisor: Yunheung Paek

**University of California, Irvine.** Irvine, CA, USA ..... Jul 2016 – Aug 2016

Visiting Student

Advisors: Michael Franz, Per Larsen

**Hardware-assisted randomization of data**

**Technische Universität Darmstadt.** Darmstadt, Germany ..... May 2015 – Jul 2015

Visiting Student

Advisor: Ahmad-Reza Sadeghi

**Kernel code randomization**

**Carnegie Mellon University.** Pittsburgh, PA, USA ..... Jun 2014 – Aug 2014

Visiting Student

Advisors: Amit Vasudevan, Virgil Gligor

**$\mu$ Hypervisors**

**Software Attestation**

**George Mason University.** Fairfax, VA, USA ..... Jan 2012 – Mar 2012

Visiting Student

Advisor: Brent Byunghoon Kang

**RWTH Aachen University.** Aachen, Germany ..... Jan 2011 – Mar 2011

Intern

Advisor: Sergey Yakushkin, Rainer Leupers

**Compile-time optimization with machine learning**

**Seoul National University.** Seoul, Korea ..... Jan 2009 – Feb 2009

Intern

Advisor: Seongwoo Kim, Seung-Woo Seo

**Group Key Management**