

Hocheol Nam

Curriculum Vitae

Ph.D. candidate, KAIST, Daejeon, South Korea

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ABOUT

I'm a Ph.D. candidate in Computer Science (Information Security Program) at KAIST, advised by Prof. Min Suk Kang. I received my B.S. in Software Science at Dankook University. My current research interests are network and distributed system security, blockchain security, cellular/wireless network security, satellite communication security, and programmable data plane.

EDUCATION

Ph.D. candidate, *Computer Science (Information Security)*, KAIST, Daejeon, Republic of Korea

Expected date of completion: July 2027

- o Integrated master's/doctoral program

Bachelor of Science, *Software Science*, Dankook University, Yongin, Republic of Korea

Year of completion: August 2021

- o Minor in Applied Computer Engineering
- o Graduate with honors

EXPERIENCE

Graduate Research Assistant, July 2021 – Present

Network Security and Privacy Lab, *KAIST*, Daejeon, Republic of Korea

- o Advisor: Min Suk Kang (Associate Professor)

Conducted research on blockchain and network security, specifically focusing on fuzzing distributed systems, secure sequencing for blockchain transactions, patching cellular vulnerabilities with Open RAN, satellite communication measurement, and DDoS attacks/defenses with programmable data-plane.

Visiting Researcher, December 2024 – June 2025

SUCCESS Lab, *Texas A&M University*, College Station, TX, USA

- o Advisor: Guofei Gu (Professor)

Fully funded visiting researcher (Grant by KIISC/IITP). Conducted research on a new DoS attack against data-plane security applications.

Undergraduate Research Assistant, March 2020 – July 2021

Mobile Operating System Lab, *Dankook University*, Yongin, Republic of Korea

- o Advisor: Seehwan Yoo (Associate Professor)

Conducted research on the Trusted Execution Environment (Intel SGX), specifically focusing on cloud vSGX enclave migration and secure machine learning within SGX enclaves.

Undergraduate Intern, August 2018 – December 2019

Database Lab, *Dankook University*, Yongin, Republic of Korea

- o Advisor: Suk Kyoon Lee (Professor)

Conducted a simple study on key-value databases (e.g., LevelDB, RocksDB).

Sergeant, Feb 2016 – November 2017

The Capital Defense Command, *Republic of Korea Army*, Seoul, Republic of Korea

- o Completed compulsory military service

- o Supported the Presidential Security Service (PSS)

SELECTED PUBLICATIONS (See full publication list)

- o [NDSS'26] On the Security Risks of Memory Adaptation and Augmentation in Dataplane DoS Mitigation
- o [CCS'25] On Frontrunning Risks in Batch-Order Fair Systems for Blockchain
- o [ICSE'25] Fork State-Aware Differential Fuzzing for Blockchain Consensus Implementations
- o [FC'22] Short Paper: On the Claims of Weak Block Synchronization in Bitcoin

CERTIFICATES & TRAINING

Intel Connectivity Academy by P4ica, P4ica, Online 2024

- o P4ica courses for P4 programming for Intel Tofino ASICs
- ICA-XFG-001 (Introduction to Data Plane Programmability)
- ICA-XFG-101 (Introduction to P4 16 , Intel ® Tofino™ Family and Intel P4 Studio™ SDE)

IBM Quantum Challenge - Fall 2020 - Foundational, IBM, Online, December, 2020

- o Participate in the 3-week IBM Quantum Challenge in the Fall of 2020 - Qiskit Programming with IBM QX (Quantum Experience) for Quantum Computing

USC Software Pioneer Program in AI-based Data Science, Integrated Media 2019 Systems Center, Viterbi School of Engineering, University of Southern California, Los Angeles, CA, USA, June – July 2019

- o A short-term study abroad program at USC to study Artificial Intelligence and Data Science. Funding by the National Program of Excellence in Software, and the Institute for Information & communication Technology Planning & evaluation (IITP)

SKILLS (*Auto-generated*)

Fuzzing, Satellite Systems, Rust (Programming Language), 5G, Satellite Communications, Traffic Analysis, Bitcoin, Telemetry, Internet Security, Mobile Internet, Security Systems, Cybersecurity, Blockchain, 4g, Data Security, Ubuntu, Information Security, Measurement Methods, Bash, Domain Name System (DNS), RAN, GitHub, Network Security, Privacy, Wireless Security, Qiskit, Cloud Computing, Python (Programming Language), Computer Science, JavaScript, Networking, Programming, Security, Java, C++, Ddos Mitigation, Ddos, Cellular Communications

TEACHING & ADVISING

Teaching Assistant

KAIST

- **CS348: Introduction to Information Security**
 - o 2022/2024 Spring
- **CS341: Introduction to Computer Networks**
 - o 2022 Fall
- **CS966/CS986: School of Computing Colloquium**
 - o 2023 Spring
- **KTP543: Introduction to Cybersecurity**
 - o 2023/2024/2025 Fall

Supervision of Thesis

- **Yonggeun Kim**, KAIST, Daejeon, Republic of Korea, December 2025
 - Bachelor's thesis: Linearity-Based CRC Collision Attack against Programmable Switches

AWARDS & HONORS

Distinguished Artifact Reviewers Award, ACM CCS, 2025

- Awards for outstanding artifact reviewers in ACM CCS 2025

Best Teaching Assistant Award, School of Computing, KAIST, 2022

- Awards for outstanding TAs in Spring 2022, CS348: Introduction to Information Security

KAIST/Government-sponsored Scholarship, KAIST & Ministry of Science and ICT (MSIT), 2022–2026

- Fully-funded Ph.D. program at KAIST

Honor Student Award, Dankook University, 2021

- Graduate with honors

National Excellence Scholarship (Natural Sciences and Engineering), Korea Student Aid Foundation (KOSAF) & Ministry of Science and ICT (MSIT), 2019–2020

- Scholarship for undergraduate students who have excellent academic performance in STEM

Bronze Prize in SW Contest, Dankook University, 2019

- Project : Blockchain-based Supply/Production Chain Management System

Scholarship for Academic Excellence, Dankook University, 2015–2018

- Scholarship for undergraduate students who have excellent academic performance

ACADEMIC SERVICE

Program Committee

- USENIX Security 2027

Artifact Evaluation Committee

- USENIX Security 2026
- ACM CCS 2025, 2026
- NDSS 2027

Reviewer

- IEEE Transactions on Dependable and Secure Computing (TDSC) 2025, 2026
- ACM CCS (Poster/Demonstration Sessions) 2025

TALK & PRESENTATIONS

On the Security Risks of Memory Adaptation and Augmentation in Data-plane DoS Mitigation

- Security@KAIST Fair, KAIST, Daejeon, South Korea, Sep. 2026.
- KIISE Korea Computer Congress (*KCC'26*), Jeju, South Korea, Jun. 2026.
- Network and Distributed System Security Symposium (*NDSS'26*), San Diego, CA, USA, Feb. 2026.

Fork State-Aware Differential Fuzzing for Blockchain Consensus Implementations

- o Security@KAIST Fair, KAIST, Daejeon, South Korea, Aug. 2025.
- o IEEE/ACM International Conference on Software Engineering (*ICSE'25*), Ottawa, Canada, May. 2025.
- o Texas A&M University, College Station, TX, USA, Apr. 2025.
- o KAIST-NUS Joint Seminar, KAIST, Daejeon, South Korea, Jun. 2024.

On the Claims of Weak Block Synchronization in Bitcoin

- o World Conference on Information Security Applications (*WISA'22*), Jeju, South Korea, Aug. 2022
- o IFCA Financial Cryptography and Data Security (*FC'22*), St. George's, Grenada, May. 2022.
- o National University of Singapore, Virtual (Zoom), Feb. 2022.
- o KAIST, Virtual (Gather), Nov. 2021.

PUBLICATIONS

International Papers

Hocheol Nam, Daehyun Lim, Huancheng Zhou, Guofei Gu, and Min Suk Kang. “**On the Security Risks of Memory Adaptation and Augmentation in Data-plane DoS Mitigation.**” In *Proceedings of the 33rd Network and Distributed System Security Symposium (NDSS)*. 2026.

Seungjin Baek, **Hocheol Nam**, and Min Suk Kang. “**A Comparative Analysis of Cyber Attacks against Satellite Internet.**” In *Proceedings of the 9th International Conference on Mobile Internet Security (MobiSec)*, 2025.

Eunchan Park, Taeung Yoon, **Hocheol Nam**, Deepak Maram, and Min Suk Kang. “**On Frontrunning Risks in Batch-Order Fair Systems for Blockchains.**” In *Proceedings of the 32nd ACM Conference on Computer and Communications Security (CCS)*, 2025.

Wonhoi Kim*, **Hocheol Nam***, Muoi Tran, Amin Jalilov, Zhenkai Liang, Sang Kil Cha, and Min Suk Kang. “**Fork State-Aware Differential Fuzzing for Blockchain Consensus Implementations.**” In *Proceedings of the 47th International Conference on Software Engineering (ICSE)*, 2025.

Seungjin Baek*, **Hocheol Nam***, Yongwoo Oh, Muoi Tran, and Min Suk Kang. “**Short Paper: On the Claims of Weak Block Synchronization in Bitcoin.**” In *Proceedings of International Conference on Financial Cryptography and Data Security (FC)*, pages 663–671, 2022.

Hocheol Nam, Jaewon Park, SeungGyun Lee, Seunghyun Yeo, and Seehwan Yoo. “**Hints for Memory Optimization of Asylo-based SGX Enclave Applications.**” In *Proceedings of 2020 International Conference on Information and Communication Technology Convergence (ICTC)*, 2020.

Seunggyun Lee, **Hocheol Nam**, Jaewon Park, and Seehwan Yoo. “**Student Session: Comparative Analysis of Live VM Migration with SGX Enclave.**” In *Proceedings of IEEE 26th International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA)*, 2020.

Domestic Papers (*written in Korean*)

Wooil Kim, **Hocheol Nam**, and Min Suk Kang. “**A Comparative Analysis of Runtime Reconfigurable Data Plane Systems on Programmable Switches.**” In *Proceedings of 2026 KIISE Korea Computer Congress (KCC)*, 2026.

Janin Chaib, **Hocheol Nam**, Dong Hyeok Kim, and Min Suk Kang. “**On the Security and Privacy of the Store-and-Forward Operation in 5G LEO NTN.**” In *Proceedings of 2026 KIISE Korea Computer Congress (KCC)*, 2026.

**Co-first authors.*

Dong Hyeok Kim, Seungjin Baek, **Hocheol Nam**, and Min Suk Kang. “**Modeling Cellular Network Vulnerabilities and Security Patches Using Finite State Machines.**” In *Proceedings of 2025 KIISC Conference on Information Security and Cryptology (CISC-S)*, 2025.

Dong Hyeok Kim, **Hocheol Nam**, Seungjin Baek, and Min Suk Kang. “**Open RAN Data-plane Structure for Adaptive Network Function Development.**” In *Proceedings of 2024 KIISE Korea Computer Congress (KCC)*, 2024.

Dong Hyeok Kim, **Hocheol Nam**, Seungjin Baek, and Min Suk Kang. “**Open RAN Supply Chain Attack exploiting xApp E2SM Vulnerability.**” In *Proceedings of 2023 KIISE Korea Software Congress (KSC)*, 2023.

Seungjin Baek, Dong Hyeok Kim, **Hocheol Nam**, and Min Suk Kang. “**Traffic Watermarking on Calls using VoIP Gateway.**” In *Proceedings of 2023 KIISC Conference on Information Security and Cryptology (CISC-W)*, 2023.

Byungkyu Kong, Seungjin Baek, **Hocheol Nam**, and Min Suk Kang. “**Constructing a 4G/5G Cellular Testbed for End-to-end Voice Calls.**” In *Proceedings of 2023 KIISC Conference on Information Security and Cryptology (CISC-S)*, 2023.

Dong Hyeok Kim, **Hocheol Nam**, Seungjin Baek, and Min Suk Kang. “**Constructing Open RAN Test Environment.**” In *Proceedings of 2023 KIISE Korea Computer Congress (KCC)*, 2023.

Hocheol Nam, Seunggyun Lee, and Seehwan Yoo. “**A Comparative Analysis of Secure Privacy-preserving Machine Learning System.**” In *Proceedings of 2021 KIISE Korea Computer Congress (KCC)*, 2021.

Hocheol Nam, Seunggyun Lee, Jaewon Park, and Seehwan Yoo. “**A Comparative Analysis of VM Migrations with Virtual SGX.**” In *Proceedings of 2020 KIISE Korea Computer Congress (KCC)*, 2020.

Seunggyun Lee, Seunghyun Yeo, Jaewon Park, **Hocheol Nam**, and Seehwan Yoo. “**Analysis of platform attestation technology using SGX technology during VM migration.**” In *Proceedings of the KICS Summer Conference*, 2020.

Seunghyun Yeo, Seunggyun Lee, Jaewon Park, **Hocheol Nam**, and Seehwan Yoo. “**Shared Data Protection Technique with SGX.**” In *Proceedings of 2020 Workshop on Dependable and Secure Computing (WDSC)*, 2020.

Seehwan Yoo, Seunggyun Lee, Seunghyun Yeo, Jaewon Park, and **Hocheol Nam**, “**VM Migration with Secure Enclave for Secure Cloud Computing.**” In *Proceedings of the Korean Institutes of Communications and Information Sciences Summer Conference*, 2020.

REFERENCE

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