

Hyeonmin LEE

I'm a postdoctoral researcher at BK21 FOUR Intelligence Computing, Seoul National University. I received a Ph.D. in Computer Science and Engineering from Seoul National University, supervised by Prof. Taekyoung "Ted" Kwon (Seoul National University) and Prof. Taejoong "Tijay" Chung (Virginia Tech). My research interests lie in network security and its measurement: Are we using the network correctly and securely? How can we make the network (more) secure?

CONTACT INFORMATION

EMAIL: hmllee@mmlab.snu.ac.kr
ADDRESS: Network Convergence and Security Lab., 5F, Building 301, 1, Gwanak-ro, Gwanak-gu, Seoul, Republic of Korea
HOMEPAGE: <https://hyeonmin-lee.github.io/>

RESEARCH INTERESTS

NETWORK SECURITY — (especially) DNS security, Mail security
SECURITY MEASUREMENT

POSITIONS

APR 2022 - Present | **Postdoctoral Researcher**, BK21 FOUR Intelligence Computing, Seoul National University (SNU), Seoul, Republic of Korea

EDUCATION

MAR 2016 - FEB 2022 | **Ph.D.**, Computer Science and Engineering, Seoul National University (SNU), Seoul, Republic of Korea
• Dissertation: "Understanding the DANE Ecosystem in Email: How Is It Deployed and Managed?"
• Laboratory: Network Convergence and Security Lab
• Supervisors: Prof. Taekyoung "Ted" Kwon and Prof. Taejoong (Tijay) Chung

MAR 2011 - FEB 2016 | **B.S.**, Computer Science and Engineering, Seoul National University (SNU), Seoul, Republic of Korea

FALL 2014 | **Visiting Student**, Information Technology, Uppsala University, Uppsala, Sweden

PROFESSIONAL EXPERIENCES

MAY 2019 - AUG 2019 | **Visiting Researcher**
The Center for Cybersecurity, Rochester Institute of Technology, Rochester, USA
• Topic: Measuring and analyzing the ecosystem of DANE protocol in Email

SPRING 2016	Teaching Assistant Dept. of Computer Science and Engineering, Seoul National University, Seoul, Korea • Class: Engineering Frontiers and Leadership 2
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PUBLICATIONS

- Under the Hood of DANE Mismanagement in SMTP (to appear)**
 Hyeonmin Lee, Md. Ishtiaq Ashiq, Moritz Müller, Roland van Rijswijk-Deij, Taekyoung “Ted” Kwon, Taejoong Chung
 In Proceedings of the USENIX Security Symposium (USENIX Security), Boston, United States, Aug 2022
 – Dataset [<https://dane-study.github.io>]
- A Longitudinal and Comprehensive Study of the DANE Ecosystem in Email**
 Hyeonmin Lee, Aniketh Gireesh, Roland van Rijswijk-Deij, Taekyoung “Ted” Kwon, Taejoong Chung
 In Proceedings of the USENIX Security Symposium (USENIX Security), Boston, United States, Aug 2020
 – Dataset [<https://dane-study.github.io>]
- Development of Cellular Core Network Enabling Network Function Virtualization**
 Hyeonmin Lee, Junghwan Song
 The 28th Joint Conference on Communication and Information (JCCI), Yeosu, Korea, May 2018
- TwinPeaks: An Approach for Certificateless Public Key Distribution for the Internet and Internet of Things**
 Eunsang Cho, Jeongnyeo Kim, Minkyung Park, Hyeonmin Lee, Chorom Hamm, Soobin Park, Sungmin Sohn, Minhyeok Kang, Ted “Taekyoung” Kwon
 Elsevier Computer Networks (SCI-E)

RESEARCH EXPERIENCES

APR 2020 - DEC 2021	Research on Traceability for Data Stability on Cloud-edge Lifecycle <ul style="list-style-type: none"> Supported by Institute for Information and Communication Technology Promotion (IITP) Role: Researcher / Programmer
MAR 2021 - NOV 2021	Abnormal Detection and Forensic Techniques using IoT Network Traffic Analysis <ul style="list-style-type: none"> Supported by Korea Institute of Information Security & Cryptology (KIISC) Role: Project Manager (Lab.) / Researcher / Programmer
APR 2016 - DEC 2020	Versatile Network System Architecture for Multi-dimensional Diversity <ul style="list-style-type: none"> Supported by Institute for Information and Communication Technology Promotion (IITP) Role: Project Manager (Lab.) / System Designer / Programmer
FEB 2020 - NOV 2020	Research on GPU Acceleration for Fully Homomorphic Encryption <ul style="list-style-type: none"> Supported by Korea Institute of Information Security & Cryptology (KIISC) Role: Programmer
SEP 2019 - APR 2020	Developing High-performance Programming Environments and Computing Systems

	<ul style="list-style-type: none"> • Supported by National Research Foundation of Korea (NRF) • Role: Programmer
AUG 2019 - NOV 2019	Research on Distributed Web Structure and Counterplan <ul style="list-style-type: none"> • Supported by Korea Internet and Security Agency (KISA) • Role: Researcher
SEP 2018 - NOV 2018	Research on Trust and Security Scheme for Interconnection of Heterogeneous Networks <ul style="list-style-type: none"> • Supported by Electronics and Telecommunications Research Institute (ETRI) • Role: Researcher
AUG 2016 - FEB 2019	Research and Development of Open 5G Reference Model <ul style="list-style-type: none"> • Supported by Giga KOREA Foundation • Role: System Designer / Programmer
MAR 2016 - MAY 2016	Content Delivery Framework Using Spatial and Temporal Dynamics in Mobile Networks <ul style="list-style-type: none"> • Supported by National Research Foundation of Korea (NRF) • Role: Programmer
JUL 2015 - DEC 2015	Development of Network Security Acceleration for Next-generation Low-power SoC <ul style="list-style-type: none"> • Supported by Samsung Electronics • Role: Programmer

PATENTS

- **Network System and Method for Performing Message Security Thereof**
Ted “Taekyoung” Kwon, Hyunwoo Lee, Myungchul Kwak, **Hyeonmin Lee**, Junghwan Lim, Yoojung Shin
 - Registration No. 1022656110000
 - Republic of Korea, Jun. 10, 2021
- **Communication Method Based on Integrated Flat ID and System**
Ted “Taekyoung” Kwon, Hyunwoo Lee, Myungchul Kwak, **Hyeonmin Lee**, Dongjun Lee, Hyunchul Oh
 - Registration No. 1020231150000
 - Republic of Korea, Sep. 11, 2019

AWARDS & FELLOWSHIPS

- Aug 2018, Seoul National University Alumni Association Scholarship
- Fall 2014, Exchange Student Program to Uppsala University (Information Technology)

TALKS & PRESENTATIONS

- Aug 2020, USENIX Security, Online, “A Longitudinal and Comprehensive Study of the DANE Ecosystem in Email”
 - Slides [https://www.usenix.org/system/files/sec20_slides_lee-hyeonmin.pdf]
 - Video [https://www.youtube.com/watch?v=amklb5UqBNE&ab_channel=USENIX]

MISCELLANEOUS

MAR 2019
- FEB 2022

Expert Research Personnel (military service)

Seoul National University, Seoul, Republic of Korea

The expert research personnel system is a form of alternative military service in Republic of Korea, where the military service is fulfilled by conducting research at a domestic university or company for three years. I had not been involved in any military research project throughout the service.

REFERENCES

Taekyoung “Ted” Kwon (tkkwon@snu.ac.kr)

- Professor, Department of Computer Science and Engineering, Seoul National University, Seoul, Republic of Korea

Taejoong (Tijay) Chung (tijay@vt.edu)

- Assistant Professor, Department of Computer Science, Virginia Tech, Blacksburg, VA, United States