

# Hyeonmin LEE

I'm a Ph.D. candidate at Seoul National University (SNU), supervised by Prof. Taekyoung "Ted" Kwon ([Network Convergence and Security Lab](#)). 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

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HOMEPAGE: <https://hyeonmin-lee.github.io/>

## RESEARCH INTERESTS

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

## EDUCATION

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MAR 2016 - FEB 2022	<b>Ph.D.</b> , Computer Science and Engineering, Seoul National University (SNU), Seoul, Republic of Korea <ul style="list-style-type: none"><li>• Dissertation: "Understanding the DANE Ecosystem in Email: How Is It Deployed and Managed?"</li><li>• Supervisor: Prof. Taekyoung "Ted" Kwon</li></ul>
MAR 2011 - FEB 2016	<b>B.S.</b> , Computer Science and Engineering, Seoul National University (SNU), Seoul, Republic of Korea
FALL 2014	<b>Visiting Student</b> , Information Technology, Uppsala University, Uppsala, Sweden

## PROFESSIONAL EXPERIENCES

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MAY 2019 - AUG 2019	<b>Visiting Researcher</b> The Center for Cybersecurity, Rochester Institute of Technology, Rochester, USA <ul style="list-style-type: none"><li>• Topic: Measuring and analyzing the ecosystem of DANE protocol in Email</li></ul>
SPRING 2016	<b>Teaching Assistant</b> Dept. of Computer Science and Engineering, Seoul National University, Seoul, Korea <ul style="list-style-type: none"><li>• Class: Engineering Frontiers and Leadership 2</li></ul>

## PUBLICATIONS

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- **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

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APR 2020 - PRESENT	<b>Research on Traceability for Data Stability on Cloud-edge Lifecycle</b> <ul style="list-style-type: none"><li>• Supported by Institute for Information and Communication Technology Promotion (IITP)</li><li>• Role: Researcher / Programmer</li></ul>
MAR 2021 - NOV 2021	<b>Abnormal Detection and Forensic Techniques using IoT Network Traffic Analysis</b> <ul style="list-style-type: none"><li>• Supported by Korea Institute of Information Security &amp; Cryptology (KIISC)</li><li>• Role: Project Manager (Lab.) / Researcher / Programmer</li></ul>
APR 2016 - DEC 2020	<b>Versatile Network System Architecture for Multi-dimensional Diversity</b> <ul style="list-style-type: none"><li>• Supported by Institute for Information and Communication Technology Promotion (IITP)</li><li>• Role: Project Manager (Lab.) / System Designer / Programmer</li></ul>
FEB 2020 - NOV 2020	<b>Research on GPU Acceleration for Fully Homomorphic Encryption</b> <ul style="list-style-type: none"><li>• Supported by Korea Institute of Information Security &amp; Cryptology (KIISC)</li><li>• Role: Programmer</li></ul>
SEP 2019 - APR 2020	<b>Developing High-performance Programming Environments and Computing Systems</b> <ul style="list-style-type: none"><li>• Supported by National Research Foundation of Korea (NRF)</li><li>• Role: Programmer</li></ul>
AUG 2019 - NOV 2019	<b>Research on Distributed Web Structure and Counterplan</b> <ul style="list-style-type: none"><li>• Supported by Korea Internet and Security Agency (KISA)</li><li>• Role: Researcher</li></ul>
SEP 2018 - NOV 2018	<b>Research on Trust and Security Scheme for Interconnection of Heterogeneous Networks</b> <ul style="list-style-type: none"><li>• Supported by Electronics and Telecommunications Research Institute (ETRI)</li></ul>

	<ul style="list-style-type: none"> <li>• Role: Researcher</li> </ul>
AUG 2016 - FEB 2019	<b>Research and Development of Open 5G Reference Model</b> <ul style="list-style-type: none"> <li>• Supported by Giga KOREA Foundation</li> <li>• Role: System Designer / Programmer</li> </ul>
MAR 2016 - MAY 2016	<b>Content Delivery Framework Using Spatial and Temporal Dynamics in Mobile Networks</b> <ul style="list-style-type: none"> <li>• Supported by National Research Foundation of Korea (NRF)</li> <li>• Role: Programmer</li> </ul>
JUL 2015 - DEC 2015	<b>Development of Network Security Acceleration for Next-generation Low-power SoC</b> <ul style="list-style-type: none"> <li>• Supported by Samsung Electronics</li> <li>• Role: Programmer</li> </ul>

## 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

## TALKS & PRESENTATIONS

- 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](https://www.usenix.org/system/files/sec20_slides_lee-hyeonmin.pdf)]
  - Video [[https://www.youtube.com/watch?v=amklb5UqBNE&ab\\_channel=USENIX](https://www.youtube.com/watch?v=amklb5UqBNE&ab_channel=USENIX)]

## MISCELLANEOUS

MAR 2019 - FEB 2022	<b>Expert Research Personnel (military service)</b> 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.
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## REFERENCES

- Taekyoung “Ted” Kwon** ([tkkwon@snu.ac.kr](mailto:tkkwon@snu.ac.kr))
- Professor, Department of Computer Science and Engineering, Seoul National University, Seoul, Republic of Korea
- Taejoong (Tijay) Chung** ([tijay@vt.edu](mailto:tijay@vt.edu))
- Assistant Professor, Department of Computer Science, Virginia Tech, Blacksburg, VA, United States