

# Geumhwan CHO

## PERSONAL DATA

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GENDER: Male  
CITIZENSHIP: South Korea  
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## STATUS

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JUNE 2020 – *present*  
**Postdoctoral Researcher** in Security Engineering Laboratory, Sungkyunkwan University.

## EDUCATION

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- 2014.9–2020.8 **Ph.D** in DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING,  
**Sungkyunkwan University**, Korea  
Supervisor: Prof. Hyounghick Kim  
Thesis: A Study on Secure and Usable Unlock Methods for Mobile phones
- 2011.3–2013.2 **M.S.** in DEPARTMENT OF COMPUTER ENGINEERING,  
**Kyung Hee University**, Korea  
Supervisor: Prof. Sungyoung Lee  
Thesis: Activity Recognition and Energy-Efficient Optimization based on  
Accelerometer Sensor in Smartphone Environment
- 2004.3–2011.2 **B.S.** in DEPARTMENT OF COMMUNICATION ENGINEERING,  
**Cheongju University**, Korea  
Supervisor: Prof. Nam-Soo Kim

## RESEARCH INTERESTS

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Usable security  
Data-driven security  
Network security  
AI/ML security

## EXPERIENCE

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- **2014.9–2020.8:** Department of Computer Science and Engineering, College of Information and Communication Engineering, Sungkyunkwan University, Korea  
PhD Candidate – Security Engineering Laboratory
- **2011.3–2013.2:** Department of Computer Engineering, College of Electronics and Information, Kyung Hee University, Korea  
Research Assistant – Ubiquitous Computing Laboratory

## TEACHING EXPERIENCE

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- Teaching Assistant: Engineering Computer Programming (GEDB030), Department of Electrical and Computer Engineering, Sungkyunkwan University, Spring 2020. Undergraduate level course for understanding of computer security technology lectured by HyoungBok Min.
- Teaching Assistant: Engineering Computer Programming (GEDB030), Department of Electrical and Computer Engineering, Sungkyunkwan University, Fall 2019. Undergraduate level course for understanding of computer security technology lectured by Jaeyoung Choi.
- Teaching Assistant: Engineering Computer Programming (GEDB030), Department of Electrical and Computer Engineering, Sungkyunkwan University, Spring 2019. Undergraduate level course for understanding of computer security technology lectured by Yungyung Cheong.
- Teaching Assistant: Engineering Computer Programming (GEDB030), Department of Electrical and Computer Engineering, Sungkyunkwan University, Fall 2018. Undergraduate level course for understanding of computer security technology lectured by Yungyung Cheong.
- Teaching Assistant: Security Engineering (ECE5967), Department of Electrical and Computer Engineering, Sungkyunkwan University, Spring 2018. Graduate level course for understanding of computer security technology lectured by Hyoungshick Kim.
- Teaching Assistant: Introduction to Data Structure (SWE2015), Department of Software, Sungkyunkwan University, Fall 2017. Undergraduate level course on the introduction to data structures lectured by Hyoungshick Kim.
- Teaching Assistant: Introduction to Data Structure (SWE2015), Department of Software, Sungkyunkwan University, Spring 2017. Undergraduate level course for introducing to data structures lectured by Hyoungshick Kim.
- Teaching Assistant: Data Structure (ICE2002), Department of Electrical and Computer Engineering, Sungkyunkwan University, Fall 2016. Undergraduate level course for data structures lectured by Hyoungshick Kim.

## APPOINTMENTS

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- **2015:** Member of Organizing Committee In International Conference on Software Security and Assurance (ICSSA)

## AWARDS AND GRANTS

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- **2018:** The 3rd prize of the cyber security competition.
- **2017:** NAVER Ph.D. Fellowship Award

## TECHNICAL/SPECIAL SKILLS

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**OS:** Windows and Linux (Ubuntu)

**Programming:** C and Python

**Simulation and Math package:** Matlab and R

**Languages:** English and Korean (native language)

## PUBLICATIONS

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- **Refereed Publications**

- **Geumhwan Cho**, Jun Ho Huh, Soolin Kim, Junsung Cho, Heesung Park, Yenah Lee, Konstantin Beznosov, and Hyounghshick Kim “On the Security and Usability Implications of Multiple Authentication Choices”, *ACM Transactions on Privacy and Security*, 2019. (accepted)
- **Geumhwan Cho**, Junsung Cho, Sangwon Hyun, and Hyounghshick Kim “SENTINEL: A Secure and Efficient Authentication Framework for Unmanned Aerial Vehicles”, *Applied Sciences*, 2020 (SCIE, IF: 2.474).
- Yuri Son, **Geumhwan Cho**, Hyounghshick Kim and Simon S. Woo, “Understanding Users Risk Perceptions about Personal Health Records Shared on Social Networking Services”, *ASIACCS: The 12th ACM Asia Conference on Computer and Communications Security*, Auckland, New Zealand, 2019 (acceptance rate: 22.5%).
- Humberto Cervantes, Rick Kazman, Jungwoo Ryoo, Junsung Cho, **Geumhwan Cho**, Hyounghshick Kim and Jina Kang, “Data-driven Selection of Security Application Frameworks During Architectural Design”, *HICSS: The 52nd Hawaii International Conference on System Sciences*, 2019.
- DaeHun Nyang, Hyounghshick Kim, Woojoo Lee, Sung-bae Kang, **Geumhwan Cho**, Mun-Kyu Lee and Aziz Mohaisen, “Two-Thumbs-Up: Physical Protection for PIN Entry Secure against Recording Attacks”, *Computers & Security*, Volume 78, Pages 1-15, September 2018.
- **Geumhwan Cho**, Jusop Choi, Hyounghshick Kim, Sangwon Hyun, Jungwoo Ryoo, “Threat modeling and analysis of voice assistant applications”, *WISA: The 19th World Conference on Information Security Applications*, Jeju Island, Korea, 2018 (acceptance rate:  $11/44 = 25\%$ ).
- Sangwon Hyun, Junsung Cho, **Geumhwan Cho** and Hyounghshick Kim, “Design and Analysis of Push Notification-Based Malware on Android”, *Security and Communication Networks*, Volume 2018, Article ID 8510256, 12 pages, July 2018.
- Ian Oakley, Jun Ho Huh, Junsung Cho, **Geumhwan Cho**, MD. Rasel Islam and Hyounghshick Kim, “The Personal Identification Chord: A Four Button Authentication System for Smartwatches”, *ASIACCS: The 11th ACM Asia Conference on Computer and Communications Security*, Incheon, Korea, 2018 (acceptance rate:  $52/310 = 17\%$ ).
- Junsung Cho, **Geumhwan Cho**, Sangwon Hyun and Hyounghshick Kim, “Open Sesame! Design and Implementation of Backdoor to Secretly Unlock Android Devices”, *MobiSec: The 2nd International Symposium on Mobile Internet Security*, Jeju Island, Korea, 2017.
- Soyoung Kim, Sora Lee, **Geumhwan Cho**, Muhammad Ejaz Ahmed, Jaehoon Paul Jeong and Hyounghshick Kim, “Preventing DNS amplification attacks using the history of DNS queries with SDN”, *ESORICS: The 22nd European Symposium on Research in Computer Security*, Oslo, Norway, 2017 (acceptance rate:  $54/339 = 16\%$ ).
- **Geumhwan Cho**, Jun Ho Huh, Junsung Cho, Seongyeol Oh, Youngbae Song and Hyounghshick Kim, “SysPal: System-guided Pattern Locks on Android”, *S&P: The 38th IEEE Symposium on Security and Privacy*, San Jose, USA, 2017 (acceptance rate:  $60/419 = 14.3\%$ ).
- Seunghun Cha, Jaewoo Park, **Geumhwan Cho**, Jun Ho Huh and Hyounghshick Kim, “WiPING: Wi-Fi signal-based PIN Guessing attac”, *CCS: The 23rd ACM Conference on Computer and Communications Security (Poster)*, Vienna, Austria, 2016.

- **Geumhwan Cho**, Junsung Cho, Youngbae Song, Donghyun Choi and Hyounghshick Kim, “Combating online fraud attacks in mobile-based advertising”, EURASIP Journal on Information Security, Vol. 2016(1), 2016.
- **Geumhwan Cho**, Junsung Cho, Youngbae Song and Hyounghshick Kim, “An empirical study of click fraud in mobile advertising networks”, IWCC: The 4th Workshop on Cyber Crime held in conjunction with ARES, Toulouse, France, 2015.
- Junsung Cho, **Geumhwan Cho** and Hyounghshick Kim, “Keyboard or Keylogger?: a security analysis of third-party keyboards on Android”, PST: The 13rd International Conference on Privacy, Security and Trust, Izmir, Turkey, 2015.
- Youngbae Song, **Geumhwan Cho**, Seongyeol Oh, Hyounghshick Kim and Jun Ho Huh, “On the Effectiveness of Pattern Lock Strength Meters – Measuring the Strength of Real World Pattern Locks”, CHI: The 33rd ACM SIGCHI Conference on Human Factors in Computing Systems, Seoul, Korea, 2015 (acceptance rate: 565/2435 = 23%).
- Jaehoon Jeong, Jihyeok Seo, **Geumhwan Cho**, Hyounghshick Kim and Jung-Soo Park, “A Framework for Security Services Based on Software-Defined Networking”, DC2: The 2nd Workshop on Device Centric Cloud held in conjunction with IEEE AINA, Gwangju, Korea, 2015.

- **Patents**

- Hyounghshick Kim, **Geumhwan Cho**, Junsung Cho, “Secure Drone communication protocol”, Korea Patent application (10-2017-0168298), Dec. 2017.
- **Geumhwan Cho**, Junsung Cho, Hyounghshick Kim, “METHOD, APPARATUS, AND SYSTEM FOR AUTOMATICALLY GENERATING RULE FOR DETECTING VIRUS CODE, AND COMPUTER READABLE RECORDING MEDIUM FOR RECIRING THE SAME”, Korea Patent (10-2017-0024455), Feb. 2017.
- **Geumhwan Cho**, Seongyeol Oh, Youngbae Song, Jun Ho Huh and Hyounghshick Kim, “Pattern generating method for pattern lock”, Korea Patent (10-2016-0114369), Sep. 2016.
- Tai-Myoung Chung, Hyounghshick Kim, KIM, Nam-Uk Kim, Jun-Kwon Jung, **Geumhwan Cho** and Youngbae Song, “Cyber inspection system and method using SDN”, Korea Patent application (10-2015-0000), Dec. 2015.

## REFERENCES

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### **Hyounghshick Kim**

Associate Professor, Sungkyunkwan University, Suwon, Korea

hyoung@skku.edu

### **Jun Ho Huh**

Staff Engineer, Samsung Research, Samsung Electronics, Seoul, Korea

junho.huh@samsung.com

### **Simon S. Woo**

Assistant Professor, Sungkyunkwan University, Suwon, Korea

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Updated by July 24, 2020