

Haehyun Cho

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○ EDUCATION

Ph.D., Computer Science

Feb 2021

Arizona State University, Tempe, AZ

- Thesis: *Exploiting and Mitigating Advanced Security Vulnerabilities*

M.S., Computer Science and Engineering

Feb 2015

Soongsil University, Seoul, Korea

- Thesis: *Mobile App Tamper Detection Scheme Based on Core Code Attestation*

B.S., Computer Science and Engineering

Feb 2013

Soongsil University, Seoul, Korea

○ PROFESSIONAL APPOINTMENTS

Co-Director of Cyber Security Research Center

Mar 2021–Present

Soongsil University, Seoul, Korea

Assistant Professor

Mar 2021–Present

Soongsil University, Seoul, Korea

○ PUBLICATIONS

• Conference Presentation with Proceedings (refereed)

1. Penghui Zhang, Zhibo Sun, Sukwha Kyung, Hans Behrens, Zion Leonahenahe Basque, **Haehyun Cho**, Adam Oest, Ruoyu Wang, Tiffany Bao, Yan Shoshitaishvili, Gail-Joon Ahn, and Adam Doupe. “I’m SPARTACUS, No, I’m SPARTACUS: Proactively Protecting Users From Phishing by Intentionally Triggering Cloaking Behavior,” in *Proceedings of the 29th ACM Conference on Computer and Communications Security (CCS)*, Los Angeles, CA, Nov 2022.
2. Kyle Zeng, Yueqi Chen, **Haehyun Cho**, Xinyu Xing, Adam Doupe, Tiffany Bao, and Yan Shoshitaishvili. “Playing for K(H)eaps: Understanding and Improving Linux Kernel Exploit Reliability,” in *Proceedings of the 31st USENIX Security Symposium (SEC)*, Boston, MA, Aug 2022.
3. **Haehyun Cho**, Jinbum Park, Adam Oest, Tiffany Bao, Ruoyu Wang, Yan Shoshitaishvili, Adam Doupe, and Gail-Joon Ahn. “ViK: Practical Mitigation of Temporal Memory Safety Violations through Object ID Inspection,” in *Proceedings of the 27th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, Lausanne, Switzerland, Feb–Mar 2022.
4. Doowon Kim, **Haehyun Cho**, Yonghwi Kwon, Adam Oest, Adam Doupe, Sooel Son, Gail-Joon Ahn, and Tudor Dumitras. “Security Analysis on Practices of Certificate Authorities in the HTTPS Phishing Ecosystem,” in *Proceedings of the 16th ACM ASIA Conference on Computer and Communications Security (ASIA CCS)*, Online, Jun 2021.
5. Penghui Zhang, Adam Oest, **Haehyun Cho**, Zhibo Sun, RC Johnson, Brad Wardman, Shaown Sarker, Alexandros Kapravelos, Tiffany Bao, Ruoyu Wang, Yan Shoshitaishvili, Adam Doupe, and Gail-Joon Ahn, “CrawlPhish: Large-scale Analysis of Client-side Cloaking Techniques in Phishing,”

in Proceedings of the 42nd IEEE Symposium on Security and Privacy (IEEE S&P), San Francisco, CA, May 2021.

*Best Student Paper Award

6. Sung Ta Dinh, **Haehyun Cho**, Kyle Martin, Adam Oest, Kyle Zeng, Alexandros Kapravelos, Tiffany Bao, Ruoyu Wang, Adam Doupé, Gail-Joon Ahn, Yan Shoshitaishvili, “Favocado: Fuzzing the Binding Code of JavaScript Engines Using Semantically Correct Test Cases,” *in Proceedings of the 2021 Network and Distributed System Security Symposium (NDSS)*, Online, Feb 2021.
7. Marzieh Bitaab, **Haehyun Cho**, Adam Oest, Penghui Zhang, Zhibo Sun, Rana Pourmohamad, Doowon Kim, Tiffany Bao, Ruoyu Wang, Yan Shoshitaishvili, Adam Doupé, and Gail-Joon Ahn, “Scam Pandemic: How Attackers Exploit Public Fear through Phishing,” *in Proceedings of the 2020 APWG Symposium on Electronic Crime Research (eCrime)*, Online, Nov 2020.
8. **Haehyun Cho**, Jinbum Park, Joonwon Kang, Tiffany Bao, Ruoyu Wang, Yan Shoshitaishvili, Adam Doupé, and Gail-Joon Ahn, “Exploiting Uninitialized Stack Memory Uses in the Linux Kernel for Leaking Kernel Pointers,” *in Proceedings of the 14th USENIX Workshop on Offensive Technologies (Usenix WOOT)*, Online, Aug 2020.
9. **Haehyun Cho**, Jinbum Park, Donguk Kim, Ziming Zhao, Yan Shoshitaishvili, Adam Doupé, and Gail-Joon Ahn, “SmokeBomb: Effective Mitigation Against Cache Side-channel Attacks on the ARM Architecture,” *in Proceedings of the 18th ACM International Conference on Mobile Systems, Applications, and Services (ACM MobiSys)*, Online, Jun 2020.
10. Penghui Zhang, **Haehyun Cho**, Ziming Zhao, Adam Doupé, and Gail-Joon Ahn, “iCORE: Continuous and Proactive Extrospection on Multi-core IoT Devices,” *in Proceedings of the 34th ACM/SIGAPP Symposium On Applied Computing (ACM SAC)*, Limassol, Cyprus, Apr 2019.
11. **Haehyun Cho**, Penghui Zhang, Donguk Kim, Jinbum Park, Choong-Hoon Lee, Ziming Zhao, Adam Doupé, and Gail-Joon Ahn, “Prime+Count: Novel Cross-world Covert Channels on ARM Trust-Zone,” *in Proceedings of the 34th Annual Computer Security Applications Conference (ACSAC)*, San Juan, Puerto Rico, USA, Dec 2018.
12. Jaejong Baek, Sukwha Kyung, **Haehyun Cho**, Ziming Zhao, Yan Shoshitaishvili, Adam Doupé, and Gail-Joon Ahn, “Wi Not Calling: Practical Privacy and Availability Attacks in Wi-Fi Calling,” *in Proceedings of the 34th Annual Computer Security Applications Conference (ACSAC)*, San Juan, Puerto Rico, USA, Dec 2018.

• Published and Accepted Journal Articles (refereed)

1. Penghui Zhang, Adam Oest, **Haehyun Cho**, Zhibo Sun, RC Johnson, Brad Wardman, Shaown Sarker, Alexandros Kapravelos, Tiffany Bao, Ruoyu Wang, Yan Shoshitaishvili, Adam Doupé, and Gail-Joon Ahn, “CrawlPhish: Large-Scale Analysis of Client-Side Cloaking Techniques in Phishing,” *IEEE Security & Privacy*, Volume 20, pp. 10-21, Apr 2022.
2. YoungHoon Ban, Sunjun Lee, Dokyung Song, **Haehyun Cho**, and Jeong Hyun Yi, “FAM: Featuring Android Malware for Deep Learning-based Familial Analysis,” *IEEE Access*, Volume 10, pp. 20008-20018, Feb 2022.
3. Jinsung Kim, Younghoon Ban, Eunbyeol Ko, **Haehyun Cho**, and Jeong Hyun Yi, “MAPAS: A Practical Deep Learning-based Android Malware Detection System,” *International Journal of Information Security*, Feb 2022.
4. Eunbyeol Ko, Jinsung Kim, Younghoon Ban, **Haehyun Cho**, and Jeong Hyun Yi, “ACAMA: Deep

Learning-based Detection and Classification of Android Malware using API-based Features,” *Security and Communication Networks*, Vol.2021, Dec 2021.

5. Geochang Jeon, Minseoung Choi, Sunjun Lee, Jeong Hyun Yi, and **Haehyun Cho**, “Automated Multi-Layered Bytecode Generation for Preventing Sensitive Information Leaks From Android Applications,” *IEEE Access*, Volume 9, pp. 119578-119590, Aug 2021.
6. **Haehyun Cho**, Jeong Hyun Yi, and Gail-Joon Ahn. “DexMonitor: Dynamically Analyzing and Monitoring Obfuscated Android Applications,” *IEEE Access*, Volume 6, pp.71229–71240, Nov 2018.
7. **Haehyun Cho**, Jiwoong Bang, Myeongju Ji, and Jeong Hyun Yi, “Mobile application tamper detection scheme using dynamic code injection against repackaging attacks,” *The Journal of Supercomputing*, Vol.72, No.9, pp.3629–3645, Sep 2016.
8. Yiming Jing, Gail-Joon Ahn, Hongxin Hu, **Haehyun Cho**, and Ziming Zhao, “TRIPLEMON: A Multi-layer Security Framework for Mediating Inter-Process Communication on Android,” *Journal of Computer Security*, Vol.24, No.4, pp.405–426, Sep 2016.
9. **Haehyun Cho**, Jiwoong Bang, Myeongju Ji, and Jeong Hyun Yi, “Anti-debugging scheme for protecting mobile apps on android platform,” *The Journal of Supercomputing*, Vol.72, No.1, pp.232–246, Jan 2016.
10. Jongwon Choi, **Haehyun Cho**, and Jeong Hyun Yi, “Personal Information Leaks with Automatic Login in Mobile Social Network Services,” *Entropy Journal*, Vol.17, No.6, pp.3947–3962, Jun 2015.

• Invited Paper

1. Bernard Ngabonziza, Daniel Martin, Anna Bailey, **Haehyun Cho**, and Sarah Martin. “Trustzone explained: Architectural features and use cases.” in *Proceedings of the IEEE 2nd International Conference on Collaboration and Internet Computing*, Pittsburgh, PA, Nov 2016.

• Other Refereed Material

1. Jinbum Park, **Haehyun Cho**, Sungbae Yoo, Seolheui Kim, Yeji Kim, Bumhan Kim, Taesoo Kim, “Taking Kernel Hardening to the Next Level,” Black Hat Asia 2022, Singapore, May 2022.

○ PATENTS

1. Jeong Hyun Yi, **Haehyun Cho**, Jiwoong Bang, and Myeongju Ji, “Application Code Analysis Apparatus and Method for Code Analysis Using the Same,” KR Patent, Patent No.: 10–1557455, Sep 2015.
2. Jeong Hyun Yi and **Haehyun Cho**, “User Terminal to Detect the Tampering of the Applications Using Core Code and Method for Tamper Detection Using The Same,” KR Patent, Patent No.: 10–1518689, Apr 2015.

○ TALKS

- “Fuzzing the Binding Code of JavaScript Engines Using Semantically Correct Test Cases”
 - The 21st Korean Computer Scientists and Engineers Association in America (KOCSEA) Tech Symposium, Online, Nov 2021.

- **“Understanding the Underbelly of Phishing Attacks”**
 - Korea Advanced Institute of Science and Technology (KAIST), Online, Oct 2021.
 - Ulsan National Institute of Science and Technology (UNIST), Online, Oct 2021.
- **“PhD Lecture Series: Information Leaks from Systems Software and Mitigations”**
 - Qualcomm Technologies, Inc., Online, Aug 2020.
- **“Introduction and Security Concerns of Cache on ARM architecture”**
 - Samsung Research, Seoul, Korea, Jun 2018.
 - Soongsil University, Seoul, Korea, May 2018.

○ SERVICE

- **Conference Organization**
 - General co-Chair for Conference on Information Security and Cryptography Winter 2022
 - Poster Chair for the 5th International Symposium on Mobile Internet Security (MobiSec 2021)
 - Program co-Chair for Conference on Information Security and Cryptography Summer 2021
- **Program Committee**
 - 2022 SecWeb Workshop
 - 2022 Workshop on Binary Analysis Research (BAR)
 - 2022 ACM ASIA Conference on Computer and Communications Security (AsiaCCS)
 - 2022 ACM Conference on Data and Application Security and Privacy (CODASPY)
 - 2021 ACM Conference on Data and Application Security and Privacy (CODASPY)
- **Journal Reviewer**
 - IEEE Transactions on Dependable and Secure Computing (TDSC)
 - IEEE Transactions on Information Forensics & Security (TIFS)
- **External Reviewer**
 - 2019 ACM Conference on Computer and Communications Security (CCS)
 - 2019 ACM Conference on Data and Application Security and Privacy (CODASPY)
 - 2018 ACM Conference on Computer and Communications Security (CCS)
 - 2018 European Symposium on Research in Computer Security (ESORICS)
 - 2017 ACM Conference on Computer and Communications Security (CCS)
 - 2017 ACM Asia Conference on Computer and Communications Security (AsiaCCS)
 - 2017 ACM Conference on Data and Application Security and Privacy (CODASPY)

○ HONORS AND AWARDS

- **The Minister of Science and Information and Communication Technologies (ICT) Award**
for the Best Paper at CISC-S 2021, Jun 2021.
- **Best Student Paper Award**
by The 42nd IEEE Symposium on Security and Privacy (Oakland), May 2021.
- **The Engineering Graduate Fellowship**
by Ira A. Fulton Schools of Engineering, Arizona State University, May 2020.
- **The CIDSE Doctoral Fellowship**
by the School of Computing, Informatics, and Decisions Systems Engineering (CIDSE), Arizona State University, Mar 2020.

- **The Cybersecurity Fellowship**
by the School of Computing, Informatics, and Decisions Systems Engineering (CIDSE),
Arizona State University, Aug 2019.
- **Scholarship for Human Resources Development**
by Soongsil University, Seoul, Korea, Oct 2018.
- **Academic Excellence Scholarship**
by Soongsil University, Seoul, Korea.

○ EXPERIENCE SUMMARY

Secure Systems Group — PhD Intern	Qualcomm, San Diego, CA May 2020–Aug 2020
Qualcomm Product Security Initiative (QPSI) — PhD Intern	Qualcomm, San Diego, CA May 2019–Aug 2019
SEFCOM - Security Engineering for Future Computing — Graduate Research Associate	Arizona State University, Tempe, AZ Mar 2016–Feb 2021
Cyber Security Research Center — Research Associate	Soongsil University, Seoul, Korea Mar 2013–Feb 2016
Republic of Korea Army	Feb 2007–Feb 2009

○ TEACHING EXPERIENCE

- **Instructor**
 - Spring 2022, Systems Security, Soongsil University.
 - Fall 2021, Operating Systems, Soongsil University.
 - Spring 2021, Systems Programming, Soongsil University.
 - Fall B 2020, CSE 543: Info Assurance & Security, Arizona State University.
- **Teaching Assistant**
 - System Security Principles, Samsung Electronics, Jan 2015.
 - Android Security, LG Electronics, Jul 2014.
 - System Security Principles, Samsung Electronics, Jan 2014.
 - Network Security and Practice, Samsung Electronics, Aug 2013.