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 Doupé, "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. Bora Lee, Kyungchan Lim, JiHo Lee, Chijung Jung, Doowon Kim, Kyu Hyung Lee, **Haehyun Cho**, and Yonghwi Kwon, "Dazzle-attack: Anti-Forensic Server-side Attack via Fail-free Dynamic State Machine," *in Proceedings of the 23rd World Conference on Information Security Applications* (WISA), Jeju Island, Aug 2022.

3. Kyle Zeng, Yueqi Chen, **Haehyun Cho**, Xinyu Xing, Adam Doupé, 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.

4. **Haehyun Cho**, Jinbum Park, Adam Oest, Tiffany Bao, Ruoyu Wang, Yan Shoshitaishvili, Adam Doupé, 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.

5. Doowon Kim, **Haehyun Cho**, Yonghwi Kwon, Adam Oest, Adam Doupé, 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.

6. 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," *in Proceedings of the 42nd IEEE Symposium on Security and Privacy* **(IEEE S&P)**, San Francisco, CA, May 2021.
   *Best Student Paper Award

7. 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.

8. 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.

9. **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.

10. **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.

11. 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.

12. **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 TrustZone," *in Proceedings of the 34th Annual Computer Security Applications Conference* **(ACSAC)**, San Juan, Puerto Rico, USA, Dec 2018.

13. 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. Minho Kim, **Haehyun Cho**, Jeong Hyun Yi, "Large-Scale Analysis on Anti-Analysis Techniques in Real-World Malware," *IEEE Access*, Vol. 10, pp. 75802–75815, Jul 2022.

2. Jinsung Kim, Younghoon Ban, Geochang Jeon, Young Geun Kim, and **Haehyun Cho**, "LiDAR: A Light-Weight Deep Learning-Based Malware Classifier for Edge Devices," *Wireless Communications and Mobile Computing*, Vol. 2022, Jun 2022.

3. Dongho Lee, Geochang Jeon, Sunjun Lee, and **Haehyun Cho**, "Deobfuscating Mobile Malware for Identifying Concealed Behaviors," *COMPUTERS MATERIALS & CONTINUA*, Vol. 72, No.3, pp.5909–5923, Apr 2022.

4. 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*, Vol. 20, pp. 10–21, Apr 2022.
5. YoungHoon Ban, Sunjun Lee, Dokyung Song, **Haehyun Cho**, and Jeong Hyun Yi, "FAM: Featuring Android Malware for Deep Learning-based Familial Analysis," *IEEE Access*, Vol. 10, pp. 20008–20018, Feb 2022.
6. 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.
7. 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.
8. 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*, Vol. 9, pp. 119578–119590, Aug 2021.
9. **Haehyun Cho**, Jeong Hyun Yi, and Gail-Joon Ahn. "DexMonitor: Dynamically Analyzing and Monitoring Obfuscated Android Applications," *IEEE Access*, Vol. 6, pp.71229–71240, Nov 2018.
10. **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.
11. 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.
12. **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.
13. 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.

○ TALKS

• "Challenges in Mitigating Phishing Attacks"

· Personal Information Security Fair (PISFAIR) 2022, Seoul, Korea, Jun 2022.

- **"Mitigating Cache Side-channel Attacks on the ARM Architecture"**
  · Korea University, Online, Apr 2022.
- **"Mitigating Temporal Memory Safety Violations"**
  · Sungkyunkwan University, Suwon, Korea, Mar 2022.
- **"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 23rd World Conference on Information Security Applications (WISA 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**
  · 2023 ACM ASIA Conference on Computer and Communications Security (AsiaCCS)
  · 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 — Qualcomm, San Diego, CA
— PhD Intern — May 2020–Aug 2020

Qualcomm Product Security Initiative (QPSI) — Qualcomm, San Diego, CA
— PhD Intern — May 2019–Aug 2019

SEFCOM - Security Engineering for Future Computing — Arizona State University, Tempe, AZ
— Graduate Research Associate — Mar 2016–Feb 2021

Cyber Security Research Center — Soongsil University, Seoul, Korea
— Research Associate — 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.