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. **Hongjoo Jin, Sumin Yang, Moon Chan Park, Haehyun Cho, and Dong Hoon Lee. "Satellite: Effective and Efficient Stack Memory Protection Scheme for Unsafe Programming Languages,"** ***in Proceedings of the 39th International Conference on ICT Systems Security and Privacy Protection (IFIP SEC 2024)*****, Edinburgh, United Kingdom, Jun 2024.**
   ***Best Paper Award**

2. **Minseong Choi, Yubin Im, Steve Ko, Yonghwi Kwon, Yuseok Jeon, and Haehyun Cho. "DryJIN: Detecting Information Leaks in Android Applications,"** ***in Proceedings of the 39th International Conference on ICT Systems Security and Privacy Protection (IFIP SEC 2024)*****, Edinburgh, United Kingdom, Jun 2024.**

3. **Marzieh Bitaab, Haehyun Cho, Adam Oest, Zhuoer Lyu, Wei Wang, Rana Pourmohamad, Jorij Abraham, Ruoyu Wang, Tiffany Bao, Yan Shoshitaishvili, and Adam Doupé. "Beyond Phish: Toward Detecting Scam Websites at Scale,"** ***in Proceedings of the 44th IEEE Symposium on Security and Privacy*** **(IEEE S&P), San Francisco, CA, May 2023.**

4. **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.**

5. **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.**

6. **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.**

7. **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.**

8. **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.**

9. **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**

10. **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.**

11. **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.**

12. **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.**

13. **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.**

14. **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.

15. **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.**

16. **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. **Younghoon Ban, Myeonghyun Kim, and Haehyun Cho, "An Empirical Study on the Effectiveness of Adversarial Examples in Malware Detection," *Computer Modeling in Engineering & Sciences*, Vol. 139, No. 3, Jun 2024.**
2. **Seungmin Lee, Hyunghoon Kim, Haehyun Cho, and Hyo Jin Jo, "FIDS: Filtering-Based Intrusion Detection System for In-Vehicle CAN," *Intelligent Automation & Soft Computing* Vol. 37, No. 3, Sep 2023.**
3. **Byeori Kim, Minseong Choi, Taek-Young Youn, Jeong Hyun Yi, and Haehyun Cho, "Docurity: A New Cryptographic Primitive for Collaborative Cloud Systems," *Intelligent Automation & Soft Computing*, Vol. 36, No. 3, Jun 2023.**
4. **Kyungmin Sim, Jeong Hyun Yi, and Haehyun Cho, "SMINER: Detecting Unrestricted and Misimplemented Behaviors of Software Systems Based on Unit Test Cases," *Computers, Materials & Continua*, Vol. 75 No. 2, May, 2023.**
5. **Younghoon Ban, Jeong Hyun Yi, and Haehyun Cho, "Augmenting Android Malware Using Conditional Variational Autoencoder for the Malware Family Classification," *Computer Systems Science & Engineering*, Vol. 46, No. 2, Feb 2023.**
6. **Geochang Jeon, Jeong Hyun yi, and Haehyun Cho, "Hiding Data in the Padding Area of Android Applications," *IEICE Transactions on Information and Systems*, Vol. 105, No. 11, pp. 1928–1929, Nov 2022.**
7. **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.**
8. **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.**
9. **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.**
10. **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.**
11. **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.**
12. **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.**
13. **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.**
14. **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.

15. **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.**
16. **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.**
17. **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.**
18. **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.**
19. **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**
  - **Program co-Chair for the 29th Network Security Conference Korea (NetSec-KR 2023)**
  - **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

- **Best Student Paper Award**
  by the 23rd World Conference on Information Security Applications, Aug 2022.
- **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.
- **Distinguished Poster Award**
  ***"SeCore: Continuous Extrospection with High Visibility on Multi-core ARM Platforms,"* by the Organizing Committee of the 8th ACM Conference on Data and Application Security and Privacy (CODASPY), Mar 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 2023, Systems Security, Soongsil University.**
  - **Fall 2022, Operting Systems, Soongsil University.**
  - **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.**