

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 Doupe. “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 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.

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 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.
7. 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.
8. 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.
9. 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
10. Sung Ta Dinh, Haehyun Cho, Kyle Martin, Adam Oest, Kyle Zeng, Alexandros Kapravelos, Tiffany Bao, Ruoyu Wang, Adam Doupe, 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 Doupe, 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 Doupe, 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 Doupe, 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 Doupe, 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 Doupe, 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.

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. Minh 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 Paper Award**
 - by the 39th International Conference on ICT Systems Security and Privacy Protection (IFIP SEC 2024), Jun 2024.
- **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 — 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 2023, Systems Security, Soongsil University.
 - Fall 2022, Operating 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.