Yuseok Jeon

Assistant Professor of Computer Science, UNIST

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Homepage : https://ysjeon.net/
Lab : https://s2-lab.github.io/

Education

Purdue University, West Lafayette, IN, USA — Aug. 2015 - Dec. 2020
Ph.D. in Computer Science
– Advisors: Prof. Mathias Payer and Prof. Byoungyoung Lee

POSTECH, Pohang, South Korea — Feb. 2008 - Feb. 2010
M.S. in Computer and Communication Engineering
– Advisor: Prof. Jong Kim

Inha University, Incheon, South Korea — Mar. 2003 - Aug. 2007
B.S. in Computer Science and Engineering

Professional Experience

UNIST, Ulsan, South Korea — Feb. 2021 - Current
Assistant Professor, Dept. of Computer Science

Purdue University, West Lafayette, IN, USA — Aug. 2015 – Dec. 2020
Graduate Research Assistant, Dept. of Computer Science

Intel Corporation, Hillsboro, OR, USA — May. 2018 – Aug. 2018
Graduate Intern, Platform Security Division

NEC Labs America, Princeton, NJ, USA — May. 2016 – Aug. 2016
Research Intern, Security Department

Samsung Electronics, Suwon, South Korea — Dec. 2013 – Jun. 2015
Research Engineer, Software Center

National Security Research Institute, Daejeon, South Korea — Feb. 2010 – Jun. 2013
Research Engineer, Cyber Technology Department

Publications

[1] **Type++: Prohibiting Type Confusion with Inline Type Information**
Nicolas Badoux, Flavio Toffalini, Yuseok Jeon, and Mathias Payer
Network and Distributed System Security 2025 (**NDSS'25**)

[2] **ERASAN: Efficient Rust Address Sanitizer**
Jiun Min*, Dongyeon Yu*, Seongyun Jeong, Dokyung Song, and Yuseok Jeon
IEEE Symposium on Security and Privacy 2024 (**S&P'24**) (*: co-first author)

[3] **On the Robustness of Graph Reduction Against GNN Backdoor**
Yuxuan Zhu, Michael Mandulak, Kerui Wu, George Slota, Yuseok Jeon, Ka-Ho Chow, and Lei Yu
ACM Workshop on Artificial Intelligence and Security 2024 (**AISec'24**) in conjunction with CCS 2024

[4] **DryJIN: Detecting Information Leaks in Android Applications**
Minseong Choi, Yubin Im, Steve Ko, Yonghwi Kwon, Yuseok Jeon, and Haehyun Cho
International Conference on ICT Systems Security and Privacy Protection 2024 (**IFIP SEC'24**)

[5] **Pspray: Timing Side-Channel based Linux Kernel Heap Exploitation Technique**
Yoochan Lee, Jinhan Kwak, Junesoo Kang, Yuseok Jeon, and Byoungyoung Lee
USENIX Security Symposium 2023 (**SEC'23**)

[6] **DriveFuzz: Discovering Autonomous Driving Bugs through Driving Quality-Guided Fuzzing**
Seulbae Kim, Major Liu, Junghwan Rhee, Yuseok Jeon, Yonghwi Kwon, and Chung Hwan Kim
ACM Conference on Computer and Communications Security 2022 (**CCS'22**)

[7] **ShadowAuth: Backward-Compatible Automatic CAN Authentication for Legacy ECUs**
Sungwoo Kim, Gisu Yeo, Taegyu Kim, Junghwan John Rhee, Yuseok Jeon, Antonio Bianchi, Dongyan Xu, and Dave (Jing) Tian
ACM ASIA Conference on Computer and Communications Security 2022 (**ASIACCS'22**)

[8] **SwarmFlawFinder: Discovering and Exploiting Logic Flaws of Swarm Algorithms**
Chijung Jung, Ali Ahad, Yuseok Jeon, and Yonghwi Kwon
IEEE Symposium on Security and Privacy 2022 (**S&P'22**)

[9] **Certified Malware in South Korea: A Localized Study of Breaches of Trust in Code-Signing PKI Ecosystem**
Bumjun Kwon, Sanghyun Hong, Yuseok Jeon, and Doowon Kim
International Conference on Information and Communications Security (**ICICS'21**)

[10] **FuZZan: Efficient Sanitizer Metadata Design for Fuzzing**
Yuseok Jeon, Wookhyun Han, Nathan Burow, and Mathias Payer
USENIX Annual Technical Conference 2020 (**ATC'20**)

[11] **PoLPer: Process-Aware Restriction of Over-Privileged Setuid Calls in Legacy Applications**
Yuseok Jeon, Junghwan Rhee, Chung Hwan Kim, Zhichun Li, Mathias Payer, Byoungyoung Lee, and Zhenyu Wu
ACM Conference on Data and Application Security and Privacy 2019 (**CODASPY'19**)

[12] **HexType: Efficient Detection of Type Confusion Errors for C++**
Yuseok Jeon, Priyam Biswas, Scott Carr, Byoungyoung Lee, and Mathias Payer
ACM Conference on Computer and Communications Security 2017 (**CCS'17**)

[13] **TypeSan: Practical Type Confusion Detection**
Istvan Haller, Yuseok Jeon, Hui Peng, Mathias Payer, Herbert Bos, Cristiano Giuffrida, and Erik van der Kouwe
ACM Conference on Computer and Communications Security 2016 (**CCS'16**)

[14] **A Distributed Monitoring Architecture for AMIs: Minimizing the Number of Monitoring Nodes and Enabling Collided Packet Recovery**
Incheol Shin, Junho Huh, Yuseok Jeon, and David M. Nicol
Smart Energy Grid Security Workshop 2013 in conjunction with CCS 2013 (**SEGS'13**)

[15] **LT-OLSR: Attack-Tolerant OLSR against Link Spoofing**
Yuseok Jeon, Tae-Hyung Kim, Yuna Kim, and Jong Kim
IEEE Conference on Local Computer Networks 2012 (**LCN'12**) (short paper)

Services

Program Chair

- IEEE/ACIS International Conference on Software Engineering, Management and Applications **(SERA'23)**

Program Committee

- USENIX Security Symposium **(SEC'25)**
- IEEE Symposium on Security and Privacy **(S&P'25)**
- USENIX Security Symposium **(SEC'24)**
- ACM Conference on Computer and Communications Security **(CCS'24)**
- Network and Distributed System Security **(NDSS'24)**
- World Conference on Information Security Applications (WISA'24)
- USENIX Security Symposium **(SEC'23)**
- Network and Distributed System Security **(NDSS'23)**
- World Conference on Information Security Applications (WISA'23)
- The Silicon Valley Cybersecurity Conference (SVCC'23)
- USENIX Security Symposium **(SEC'22)**
- European Symposium on Research in Computer Security (ESORICS'22)
- International Symposium on Research in Attacks, Intrusions and Defenses (RAID'22)
- ACM Conference on Data and Application Security and Privacy (CODASPY'22)
- USENIX Security Symposium **(SEC'21)**
- European Symposium on Research in Computer Security (ESORICS'21)
- International Symposium on Research in Attacks, Intrusions and Defenses (RAID'21)

- ACM Conference on Data and Application Security and Privacy (CODASPY'21)
- Man-At-The-Middle Attacks Workshop (CheckMATE'21), co-located with the ACM CCS

Journal Reviewer

- IEEE Trans. on Dependable and Secure Computing
- ACM Trans. on Software Engineering and Methodology

Advising

GRADUATED STUDENTS

1. **MINSEONG CHOI** (PhD Student) 2023.2 - Current
2. **SUNGHYUN YANG** (Master-PhD Combined) 2022.9 - Current
   (Researcher) 2021.11 - 2022.8
3. **JIUN MIN** (Master-PhD Combined) 2023.2 - Current
   (Undergraduate Intern) 2020.12 - 2023.1
4. **DONGYEON YU** (Master-PhD Combined) 2023.2 - Current
   (Undergraduate Intern) 2020.12 - 2023.1
5. **JAEEUN EOM** (Master-PhD Combined) 2024.9 - Current
   (Undergraduate Intern) 2023.12 - 2024.8
6. **SANGHOON JUNG** (Master Student) 2022.9 - Current
   (Researcher) 2022.6 - 2022.8
7. **TAEYEONG HWANG** (Master Student) 2032.2 - Current
   (Undergraduate Intern) 2022.6 - 2023.1
8. **SEONG YUN JEONG** (Master Student) 2032.8 - Current
   (Undergraduate Intern) 2021.12 - 2023.7
9. **WONIL JANG** (Master Student) 2024.2 - Current
   (Researcher) 2023.6 - 2024.1
10. **YOUNGJIN LEE** (Master Student) 2024.2 - Current
    (Researcher) 2023.12 - 2024.1
11. **ZEEWUNG SHIN** (Master Student) 2024.9 - Current
    (Researcher) 2024.4 - 2024.8

UNDER-GRADUATED INTERN AND RESEARCHER

12. **INGYU JANG** 2021.5 - Current
13. **SEOHYEON LEE** 2022.7 - Current
14. **YEWAN NA** 2023.7 - Current
15. **CHANGHEON LEE** 2024.3 - Current
16. **MINKYO KIM** 2024.6 - Current
17. **JUYOUNG LEE** 2024.6 - Current
18. **DONGUK KIM** 2024.8 - Current

PAST UNDER-GRADUATED INTERN AND RESEARCHER

19. **INSUK SEO** 2021.5 - 2021.11
20. **GYOHUN HWANG** 2020.12 - 2021.12
21. **SEOHYEON LEE** 2021.5 - 2021.12
22. **LUONG DOAN** 2021.2 - 2022.1
23. **HYEONSEOK LEE** 2021.5 - 2022.1
24. **JUNESOO KANG** 2020.12 - 2022.3

25. **MINJIN KIM** 2021.12 - 2022.6
26. **YINAE PARK** 2021.12 - 2022.6
27. **ALMAS ABILKHANOV** 2020.12 - 2022.6
28. **MD.MAZBA UR RAHMAN** 2022.5 - 2022.7
29. **YECHAN PARK** 2022.6 - 2022.8
30. **SOYEON SIM** 2021.12 - 2022.8
31. **AZAMAT MYRZABEKOV** 2020.12 - 2022.9
32. **BAO TRUONG** 2021.2 - 2022.9
33. **JEONGHAN SON** 2022.6 - 2022.12
34. **NODIRKHUJA KHUJAEV** 2020.12 - 2023.2
35. **AHIN LEE** 2022.6 - 2023.2
36. **JOO HO SON** 2021.5 - 2023.2
37. **SEUNGMIN LEE** 2022.7 - 2023.6
38. **YONGMIN KWON** 2023.7 - 2023.11
39. **HYUNJU KIM** 2022.12 - 2023.5
40. **MINJOONG KIM** 2023.2 - 2023.11
41. **HYEONJU SHIN** 2023.6 - 2023.12
42. **CHANMIN PARK** 2021.12 - 2024.1
43. **YONGHUN NO** 2023.12 - 2024.2
44. **SEUNGBHIN PARK** 2024.1 - 2024.2
45. **JUNWHA HONG** 2020.12 - 2024.2

Funding

Since February 2021, my group's total funding: KRW 4,038,000,000

1. **Development of Integrated Platform for Expanding and Safely Applying Memory-Safe Languages**
   Institute for Information and Communication Technology Promotion (IITP)
   Period of Contract: 2024.06 – 2027.12
   My Group's Share: KRW 1,062,000,000
   Lead Principal Investigator
2. **Development of Cyber Resilience Method for Intelligent Service Robots**
   Institute for Information and Communication Technology Promotion (IITP)
   Period of Contract: 2024.04 – 2027.12
   My Group's Share: KRW 480,000,000
   Co-Principal Investigator
3. **AI-Based Automated Vulnerability Detection and Safe Code Generation**
   Institute for Information and Communication Technology Promotion (IITP)
   Period of Contract: 2024.07 – 2026.12
   My Group's Share: KRW 375,000,000
   Researcher
4. **Development of a Personal Information Protection Framework for Identifying and Blocking Trackers**
   Korea Internet and Security Agency (KISA)
   Period of Contract: 2022.04 – 2025.12
   My Group's Share: KRW 660,000,000
   Co-Principal Investigator
5. **The Development of Ransomware Attack Source Identification and Analysis Technology**
   Institute for Information and Communication Technology Promotion (IITP)
   Period of Contract: 2022.04 – 2024.12
   My Group's Share: KRW 260,000,000

Co-Principal Investigator

6. **Research on Diagnosing and Mitigating Vulnerabilities for the Secure Use of Open Operating Systems**
   National Security Research Institute (NSRI)
   Period of Contract: 2024.05 – 2024.10
   My Group's Share: KRW 65,000,000
   Sole Principal Investigator
7. **Research on Type Safety Enforcement through CMA Recognition**
   National Security Research Institute (NSRI)
   Period of Contract: 2024.04 – 2024.10
   My Group's Share: KRW 60,000,000
   Sole Principal Investigator
8. **Research on Addressing Vulnerabilities in Linux-Based Open Source Security Monitoring Tools**
   Korea Institute of Information Security and Cryptology (KIISC)
   Period of Contract: 2024.02 – 2024.11
   My Group's Share: KRW 70,000,000
   Sole Principal Investigator
9. **Development of AI-Based Fuzzing Approach for Software Vulnerability Detection**
   Ulsan National Institute of Science and Technology (UNIST)
   Period of Contract: 2023.01 – 2024.12
   My Group's Share: KRW 50,000,000
   Lead Principal Investigator
10. **Development of Next-Generation Computing Techniques for Hyper-Composable Data centers**
    Information Technology Research Center (ITRC)
    Period of Contract: 2021.07 – 2028.12
    My Group's Share: KRW 400,000,000
    Researcher
11. **Research on Security Analysis for Cross-language Android Applications**
    Institute for Information and Communication Technology Promotion (IITP)
    Period of Contract: 2022.04 – 2024.6
    My Group's Share: KRW 350,000,000
    Researcher
12. **Development of Hardware-Based Memory Tagging Approach for Detecting Type Safety Violations**
    Korea Institute of Information Security and Cryptology (KIISC)
    Period of Contract: 2023.02 – 2023.11
    My Group's Share: KRW 100,000,000
    Sole Principal Investigator
13. **Development of Automated Vulnerability Detection Approach for Autonomous Cars**
    Institute for Information and Communication Technology Promotion (IITP)
    Period of Contract: 2021.06 – 2022.1
    My Group's Share: KRW 25,000,000
    Co-Principal Investigator
14. **Development of CMA-aware Memory Safety Violation Detection Mechanism**
    National Research Foundation of Korea (NSR)
    Period of Contract: 2023.06 – 2024.5
    My Group's Share: KRW 56,000,000
    Sole Principal Investigator
15. **Enforcing software memory and type safety using compiler and fuzzing techniques**
    National Research Foundation of Korea (NSR)
    Period of Contract: 2021.06 – 2022.5
    My Group's Share: KRW 40,000,000
    Sole Principal Investigator

16. **Development of Automated System for Drone Memory Vulnerability Detection**
National Security Research Institute (NSRI)
Period of Contract: 2023.04 – 2023.10
My Group's Share: KRW 60,000,000
Sole Principal Investigator
17. **Research on Rust-Based Mutil-language Program Security**
National Security Research Institute (NSRI)
Period of Contract: 2023.04 – 2023.10
My Group's Share: KRW 60,000,000
Sole Principal Investigator
18. **Research on Mobile Browser Module Security**
National Security Research Institute (NSRI)
Period of Contract: 2022.04 – 2022.10
My Group's Share: KRW 60,000,000
Sole Principal Investigator
19. **Automated Software Safety Analysis Based on RUST Language**
National Security Research Institute (NSRI)
Period of Contract: 2022.04 – 2022.10
My Group's Share: KRW 60,000,000
Sole Principal Investigator
20. **Research on Shared Kernel Vulnerabilities and Defense Strategies in Container Environments**
National Security Research Institute (NSRI)
Period of Contract: 2021.04 – 2021.10
My Group's Share: KRW 50,000,000
Sole Principal Investigator
21. **Research on RUST Language Safety**
National Security Research Institute (NSRI)
Period of Contract: 2021.04 – 2021.10
My Group's Share: KRW 50,000,000
Sole Principal Investigator

Patents

[1] **Tracker Detection Devices, Tracker Detection Methods, and Computer Programs.** Yuseok Jeon. KR patent 10-2023-0182097 (Applied 12/2023)

[2] **Apparatus and Method for Detecting Malware Based Android.** Yuseok Jeon, Seongyun Jeong. KR patent 10-2023-0193639 (Applied 12/2023)

[3] **Memory Stability Determination Device, Method for Determining Stability of Memory Allocation Code by Detecting Atypical Memory Allocation Code, and Computer Program.** Yuseok Jeon. KR patent 10-2023-0174829 (Applied 12/2023)

[4] **Program Stability Determination Device, Method for Detecting Raw Pointers and Extracting Code Associated with the Raw Pointers, and Computer Program.** Yuseok Jeon. KR patent 10-2023-0174828 (Applied 12/2023)

[5] **Apparatus, Method and Computer Program for Testing Autonomous Driving Program.** Yuseok Jeon. KR patent 10-2023-0174827 (Applied 12/2023)

[6] **UAF Sequence-aware Efficient Fuzzing Approach.** Yuseok Jeon. KR patent 10-2023-0196124 (Applied 12/2023)

[7] **Memory Error Detection Apparatus and Method.** Yuseok Jeon. KR patent 10-2023-0189110 (Applied 12/2023)

[8] **Vulnerability Detection Device, Vulnerability Detection Method and Computer Program for Rust Language.** Yuseok Jeon. KR patent 10-2023-0023155 (Applied 2/2023)

[9] **Device and Method for Detecting Type Confusion using Memory Tagging, and Computer Program for Executing the Method.** Yuseok Jeon. KR patent 10-2022-0174184 (Applied 12/2022)

[10] **Security Check Code Validity Check Device, Security Check Code Validity Check Method and Computer Program.** Yuseok Jeon, Ingyu Jang. KR patent 10-2022-0174191 (Applied 12/2022)

[11] **Memory stability determination device, method for determining stability of memory allocation code by detecting atypical memory allocation code, and computer program.** Yuseok Jeon. US Patent 18/382,187 (Applied 10/2023), KR patent 10-2022-0179795 (Applied 12/2022)

[12] **Security Setting Device, Method of Setting Oer-process Security Policy, and Computer Program Stored in Recording Medium for Execution of the Method.** Yuseok Jeon. US Patent 18/069,801 (Applied 12/2022), KR patent 10-2630816 (Granted 01/2024)

[13] **Blackbox Program Privilege Flow Analysis with Inferred Program Behavior Context.** Junghwan Rhee, Yuseok Jeon, Zhichun Li, Kangkook Jee, Zhenyu Wu, Guofei Jiang. US Patent 10,505,962 (Granted)

[14] **Fine-Grained Analysis and Prevention of Invalid Privilege Transitions.** Junghwan Rhee, Yuseok Jeon, Zhichun Li, Kangkook Jee, Zhenyu Wu, Guofei Jiang. US Patent 10,402,564 (Granted)

[15] **Automated blackbox inference of external origin user behavior.** Zhenyu Wu, Jungwhan Rhee, Yuseok Jeon, Zhichun Li, Kangkook Jee, Guofei Jiang. US Patent 10,572,661 (Granted)

Teaching

Software Security: CSE614, 3 credits, 20 students	**Fall 2024**
System Programming: CSE251, 3 credits, 85 students	**Spring 2024**
Advanced Computer Security: CSE551, 3 credits, 17 students	**Fall 2023**
System Programming: CSE251, 3 credits, 85 students	**Spring 2023**
Computer Security: CSE467, 3 credits, 41 students	**Spring 2022**
Advanced Computer Security: CSE551, 3 credits, 8 students	**Fall 2021**
Software hacking and defense: UNI204, 1 credit, 10 students	**Winter 2021**
Computer Security: CSE467, 3 credits, 37 students	**Spring 2021**
Object Oriented Programming: CSE241, 3 credits, 65 students	**Fall 2020**

Invited Talks

CPS Security Workshop, KIISC	**Fall 2020**
Graduate School of Information Security Seminar, KAIST	**Spring 2021**
CS Seminar, Soongsil University	**Spring 2021**
CS Seminar, Yonsei University	**Fall 2021**
CS Seminar, Hannam University	**Fall 2021**
CS Seminar, Inha University	**Fall 2021**
Graduate School of Information Security Seminar, Sungkyunkwan University	**Spring 2022**
CS seminar, Soonchunhyang University	**Spring 2022**
Ulsan Science High School Talk	**Summer 2022**
Sejong Cybersecurity Workshop, Sejong University	**Fall 2022**
National Security Research Institute Seminar, NSRI	**Spring 2023**
Software Disaster Research Center Seminar, STAAR	**Summer 2023**
KCC Seminar, KIISE	**Summer 2023**
Deagu Cybersecurity Conference, DIP	**Fall 2023**
Graduate School of Information Security Seminar, Korea University	**Fall 2023**
Maritime Cyber Security Expert Forum, KIISC	**Fall 2023**
National Security Research Institute Seminar, NSRI	**Fall 2023**
Improving Information Security Skills Workshop Talk, UIPA	**Summer 2024**

Honors and Awards

CERIAS Diamond Award, 2020
Bilsland Dissertation Fellowship, 2020
ACM CCS travel grant, 2016.
Expert certification (top grade), Samsung S/W certificate, 2015.
19th place, Samsung S/W Programming Contest Final, 2014.
19th place, ACM International Collegiate Programming Contest in Asia - Seoul, 2004.
Top prize, National Computer Competition, South Korea, 2001.
Bronze prize, Information Technology Competition, South Korea, 2001.
Bronze prize, Korea Computer Competition, South Korea, 2001.

Open Source Contribution	ERASAN: Efficient Rust Address Sanitizer (GitHub repo) FuZZan: Efficient Sanitizer Metadata Design for Fuzzing (GitHub repo) HexType: Efficient Detection of Type Confusion Errors for C++ (GitHub repo) TypeSan: Practical Type Confusion Detection (GitHub repo) Key-Manager (in Samsung Tizen OS): reducing probability of key leaking from device (GitHub repo)

Yuseok Jeon
Department of Computer Science and Engineering
Ulsan National Institute of Science and Technology
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