Yuseok Jeon

Assistant Professor of Computer Science, UNIST

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Research Interests

I am interested in software and system security including compiler-based, runtime-based, and language based protection mechanisms and security policies. In particular, my research is focused in enforcing strong type/memory safety guarantees at the compiler and runtime level.

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

Work 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

Conferences

[**C12**] ERASAN: Efficient Rust Address Sanitizer ERASAN: Efficient Rust Address Sanitizer, Jiun Min*, Dongyeon Yu*, Seongyun Jeong, Dokyung Song, and Yuseok Jeon (*: co-first author), IEEE Symposium on Security and Privacy 2024 (**S&P'24**).

[**C11**] 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**).

[**C10**] 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**).

[**C9**] 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**).

[**C8**] 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**). (18.4% acceptance rate - 85/463).

[**C7**] 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**). (14% acceptance rate - 57/407).

[**C6**] 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**). (24.3% acceptance rate - 49/202).

[**C5**] FuZZan: Efficient Sanitizer Metadata Design for Fuzzing, Yuseok Jeon, Wookhyun Han, Nathan Burow, Mathias Payer, USENIX Annual Technical Conference 2020 (**ATC'20**). (18.6% acceptance rate - 65/348).

[**C4**] 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, Zhenyu Wu, ACM Conference on Data and Application Security and Privacy 2019 (**CODASPY'19**). (23.5% acceptance rate - 28/119).

[**C3**] HexType: Efficient Detection of Type Confusion Errors for C++, Yuseok Jeon, Priyam Biswas, Scott Carr, Byoungyoung Lee, Mathias Payer, ACM Conference on Computer and Communications Security 2017 (**CCS'17**). (18.1% acceptance rate - 151/836).

[**C2**] 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**). (16.4% acceptance rate - 137/831).

[**C1**] 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).

Workshops

[**W1**] 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**).

Academic Service

Program Chair

IEEE/ACIS International Conference on Software Engineering, Management and Applications (SERA) 2023

Program Committee

USENIX Security Symposium (SEC) 2025, 2024, 2023, 2022, 2021
IEEE Symposium on Security and Privacy (S&P) 2025
ACM Conference on Computer and Communications Security (CCS) 2024
Network and Distributed System Security (NDSS) 2024, 2023
European Symposium on Research in Computer Security (ESORICS) 2022, 2021
International Symposium on Research in Attacks, Intrusions and Defenses (RAID) 2022, 2021
ACM Conference on Data and Application Security and Privacy (CODASPY) 2022, 2021
World Conference on Information Security Applications (WISA) 2024, 2023
The Silicon Valley Cybersecurity Conference (SVCC) 2023
Man-At-The-Middle Attacks Workshop (CheckMATE) Co-located with the ACM CCS, 2021

Reviewer

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

Teaching

(CSE551) Advanced Computer Security: Fall 2023, Fall 2021
(CSE467) Computer Security: Spring 2022, Spring 2021
(CSE251) System Programming: Spring 2023
(CSE241) Object Oriented Programming: Fall 2020

(UNI204) Software hacking and defense: Winter 2021

Patents

[PT5] 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.

[PT4] 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.

[PT3] 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.

[PT2] Apparatus and method for collecting network data traffic, Incheol Shin, Yuseok Jeon, Sinkyu Kim, Jungtaek Seo, US Patent App. 14/401,364 / South Korea 1013693830000.

[PT1] Apparatus and method for analyzing vulnerability of ZigBee Network, Yuseok Jeon, Incheol Shin, Jaeduck Choi, Gunhee Lee, Sinkyu Kim, Jungtaek Seo, US Patent 9,294,496 / South Korea 1014141760000.

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 Software

ERASAN: Efficient Rust Address Sanitizer 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)