Sungwoo Kim

Ph. D. Student in Computer Science at Purdue University
sk@purdue.edu
https://sung-woo.kim/

Research Interests

System Security, Program Analysis, Cyber-Physical System.

Education

Purdue University, Dept. of Computer Science — West Lafayette, IN, USA
Ph. D. in Computer Science — 2021–Now
Advisors: Dave (Jing) Tian and Dongyan Xu

Kwangwoon University, Dept. of Electronics and Communications Eng. — Seoul, Republic of Korea
B.S. in Electronics and Communications Engineering — 2014–2020
Advisor: Suwon Park

Conference Publications

[C2] Fuzz The Power: Dual-role State Guided Black-box Fuzzing for USB Power Delivery
Kyungtae Kim, **Sungwoo Kim**, Kevin Buttler, Antonio Bianchi, Rick Kennell, Dave (Jing) Tian
*32nd USENIX Security Symposium (Security'23), Anaheim, CA, August 2023 (**USENIX '23**)*
Anaheim, CA, August 2023 *Acceptance Rate: 29.2%*

[C1] 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
*Proceedings of the 2022 ACM Asia Conference on Computer and Communications Security (**ASIACCS '22**)*
Nagasaki, Japan, May 2022, *acceptance rate=18.4%*

Professional Service

Artifact Evaluation Committee (AEC)

- USENIX Security Symposium (USENIX) 2024

Work Experience

Purdue University, Dept. of Computer Science — West Lafayette, IN, USA
Graduate Research Assistant — 2021–Now
- Researching iOS kernel security
- Researching Bluetooth security
- Researching in-vehicle network security

Inedit Corp. — Seoul, Republic of Korea
Software Engineer — Apr.–Jul. 2021
- Maintained a mobile application "brandazine" using Django REST Framework, Vue, and Cordova

Purdue University, Dept. of Computer Science — West Lafayette, IN, USA
Research Intern — Aug. 2020– Jul. 2021
- Internship advisor: Dave (Jing) Tian
- Researched in-vehicle network security

F1Security — Seoul, Republic of Korea
Software Engineer — May 2018–Jan. 2020
- Developed a low-overhead Honeypot system for embedded devices
- Developed a signature-based anti-virus system for web applications

Republic of Korea Cyber Operations Command — Republic of Korea
Sergeant; Software Engineer — Jun. 2016–Mar. 2018

- Developed military software

Korea Information Technology Research Institute Seoul, Republic of Korea
Trainee in "Best of the Best (BOB)" Program Jun. 2014–Jan. 2015
- Trained security techniques: binary analysis, SQL injection, buffer overflow, etc.
- Reported vulnerabilities discovered from a commercial car rental system

TEACHING EXPERIENCE

Korea Maritime & Ocean University Busan, Republic of Korea
Guest Lecturer May 10. 2024
- Lectured on CAN security

Hongik University High School Seoul, Republic of Korea
Guest Lecturer Jul. 07. 2023
- Lectured on software security

Hongik University High School Seoul, Republic of Korea
Instructor Mar.–Jul. 2021
- Lectured on a quadruped robot dog

PATENTS

[PT2] Honeynet System for Internet Of Things using Packet Virtualization
Korean Patent No. 102062718

[PT1] Origin Tracking Method and System using DNS Server for Infected Systems
Korean Patent No. 101961451

CVE

Linux Kernel (7)
- CVE-2024-36968, CVE-2024-36013, CVE-2024-36012, CVE-2024-36011, CVE-2023-40283, CVE-2023-28866, CVE-2022-45934

Commercial Drone (1)
- CVE-2021-34125

SKILLS

Programming Languages: C; Golang; Haskell; Erlang
Web Application Framework: NextJS (Typescript); NestJS (Typescript); Spring (Kotlin and Java); .NET core (C#)
User Interface Library / Framework: React; Vue; SCSS
Software Tools: IDA Pro; Ghidra; OllyDBG