Seunghoon Woo

Assistant Professor (@KOREA UNIVERSITY), Chief Scientist (@LABRADOR LABS)

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Software Security; Software Vulnerability Detection;
Software Composition Analysis; Code Clone Detection.

Earned Degrees

- **M.S. & Ph.D.** in Computer Science and Engineering, Korea University (GPA 4.45/4.5) — Sep 2016 - Aug 2022
- **B.S.** in Computer Science and Engineering, Korea University (GPA 4.22/4.5) — Mar 2010 - Feb 2016

Doctoral Dissertation

- Detecting Software Vulnerabilities for Mitigating Risks of Open-Source Reuse (Advisor: Prof. Heejo Lee) — Aug 2022

Working Experiences

- Korea University, Assistant Professor — Sep 2023 - Present
- LABRADOR LABS Inc., Chief Scientist — May 2022 - Present
- Center for Software Security and Assurance (CSSA), Research Professor — Sep 2022 - Aug 2023
- National University of Singapore, Research Intern — Dec 2016 - Feb 2017
- Samsung Electronics, Student Intern & Employee — Jun 2014 - Aug 2014, Dec 2015 - Jan 2016
- DoDotDo (startup), Core Developer — Jan 2015 - Sep 2015

Commitee

- USENIX Security 2026 (Security 2026) — 2026
- Information Security Conference (ISC 2025) — 2025
- ACM ASIA Conference on Computer and Communications Security (ASIACCS 2025) — 2025

Reviewer Experiences

- COSE: Computers & Security — 2025
- T-IFS: IEEE Transactions on Information Forensics and Security — 2025
- TDSC: IEEE Transactions on Dependable and Secure Computing — 2024
- TSE: IEEE Transactions on Software Engineering — 2023, 2024
- TOSEM: ACM Transactions on Software Engineering and Methodology — 2023
- SP&E: Software: Practice and Experience — 2023
- IEEE Transactions on Vehicular Technology — 2022
- Journal of Communications and Networks — 2021

Publications - International Conference

[1] **SBridge: Identifying Source-to-Binary Function Similarity via Cross-Domain Control Block Matching (Accepted)**
Heedong Yang, Jeongwoo Lee, Hajin Yun, Seunghoon Woo
FSE 2026: The ACM International Conference on the Foundations of Software Engineering
Montreal, Canada, Jul 2026

[2] **Human vs AI: Insecure Use of Security-Sensitive Functions in AI-generated Code in Comparison to Human-written Code (Accepted)**
Joonku Lee, Sieun Ju, Seunghoon Woo, and Heejo Lee
ACM SAC 2026: 41st ACM/SIGAPP Symposium On Applied Computing
Thessaloniki, Greece, Mar 2026

[3] **CRYPTBARA: Dependency-Guided Detection of Python Cryptographic API Misuses**
Seogyeong Cho, Seungeun Yu, and Seunghoon Woo
ASE 2025: 40th IEEE/ACM Automated Software Engineering Conference
Seoul, Korea, Nov 2025

[4] **ZCOVER: Uncovering Z-Wave Controller Vulnerabilities Through Systematic Security Analysis of Application Layer Implementation**
Carlos Nkuba Kayembe, Jimin Kang, Seunghoon Woo*, and Heejo Lee* (* Co-corresponding authors)
DSN 2025: 55th Annual IEEE/IFIP International Conference on Dependable Systems and Networks
Naples, Italy, Jun 2025

[5] **TIVER: Identifying Adaptive Versions of C/C++ Third-Party Open-Source Components Using a Code Clustering Technique**
Youngjae Choi and Seunghoon Woo
ICSE 2025: 47th International Conference on Software Engineering (**Top-tier conference**)
Ottawa, Canada, Apr 2025

[6] **Enhancing Code Vulnerability Detection Using CodeGraphBERT Deep Learning Techniques**
Zeinab Shahbazi, Meshkat Mesbah, and Seunghoon Woo
ICIAI 2025: 9th International Conference on Innovation in Artificial Intelligence
Singapore, Singapore, Mar 2025

[7] **BLOOMFUZZ: Unveiling Bluetooth L2CAP Vulnerabilities via State Cluster Fuzzing with Target-Oriented State Machines**
Pyeongju Ahn, Yeonseok Jang, Seunghoon Woo*, and Heejo Lee* (* Co-corresponding authors)
29th European Symposium on Research in Computer Security (ESORICS 2024)
Bydgoszcz, Poland, Sep 2024

[8] **CNEPS: A Precise Approach for Examining Dependencies among Third-Party C/C++ Open-Source Components**
Yoonjong Na, Seunghoon Woo*, Joomyeong Lee, and Heejo Lee* (* Co-corresponding authors)
ICSE 2024: International Conference on Software Engineering (**Top-tier conference**)
Lisbon, Portugal, Apr 2024

[9] **V1SCAN: Discovering 1-day Vulnerabilities in Reused C/C++ Open-source Software Components Using Code Classification Techniques**
Seunghoon Woo, Eunjin Choi, Heejo Lee, and Hakjoo Oh
Security 2023: 32nd USENIX Security Symposium (**Top-tier conference**)
Anaheim, USA, Aug 2023

[10] **MOVERY: A Precise Approach for Modified Vulnerable Code Clone Discovery from Modified Open-Source Software Components**
Seunghoon Woo, Hyunji Hong, Eunjin Choi, and Heejo Lee
Security 2022: 31st USENIX Security Symposium (**Top-tier conference**)
Boston, USA, Aug 2022

[11] **L2Fuzz: Discovering Bluetooth L2CAP Vulnerabilities Using Stateful Fuzz Testing**
Haram Park, Carlos Nkuba Kayembe, Seunghoon Woo, and Heejo Lee
DSN 2022: 52nd IEEE/IFIP International Conference on Dependable Systems and Networks
Baltimore, USA, Jun 2022

[12] **DICOS: Discovering Insecure Code Snippets from Stack Overflow Posts by Leveraging User Discussions**
Hyunji Hong, Seunghoon Woo, and Heejo Lee
ACSAC 2021: Annual Computer Security Applications Conference
Virtual, Dec 2021

[13] **V0Finder: Discovering the Correct Origin of Publicly Reported Software Vulnerabilities**
Seunghoon Woo, Dongwook Lee, Sunghan Park, Heejo Lee, and Sven Dietrich
Security 2021: 30th USENIX Security Symposium (**Top-tier conference**)
Virtual, Aug 2021

[14] **OctoPoCs: Automatic Verification of Propagated Vulnerable Code Using Reformed Proofs of Concept**
Seongkyeong Kwon, Seunghoon Woo, Gangmo Seong, and Heejo Lee
DSN 2021: 51st IEEE/IFIP International Conference on Dependable Systems and Networks
Virtual, Jun 2021

[15] **CENTRIS: A Precise and Scalable Approach for Identifying Modified Open-Source Software Reuse**
Seunghoon Woo, Sunghan Park, Seulbae Kim, Heejo Lee, and Hakjoo Oh
ICSE 2021: 43rd International Conference on Software Engineering (**Top-tier conference**)
Virtual, May 2021

[16] **VUDDY: A Scalable Approach for Vulnerable Code Clone Discovery**
Seulbae Kim, Seunghoon Woo, Heejo Lee, and Hakjoo Oh
S&P 2017: 38th IEEE Symposium on Security and Privacy (**Top-tier conference**)
San Jose, USA, May 2017

Publications - International Journal

[1] **A Large-Scale Analysis of the Effectiveness of Publicly Reported Security Patches**
Seunghoon Woo, Eunjin Choi, and Heejo Lee
Computers & Security (SCIE/IF: 4.8), Jan 2025

[2] **ZMAD: Lightweight Model-based Anomaly Detection for the Structured Z-Wave Protocol**
Carlos Nkuba Kayembe, Seunghoon Woo, Heejo Lee, Sven Dietrich
IEEE ACCESS (SCIE/IF: 3.476), Jun 2023

[3] **CIRCUIT: A JavaScript Memory Heap-Based Approach for Precisely Detecting Cryptojacking Websites**
Seunghoon Woo*, Hyunji Hong*, Sunghan Park*, Jeongwook Lee, and Heejo Lee (* contributed equally)
IEEE ACCESS (SCIE/IF: 3.476), Sep 2022

[4] **xVDB: A High-Coverage Approach for Constructing a Vulnerability Database**
Hyunji Hong, Seunghoon Woo, Eunjin Choi, Jihyun Choi, and Heejo Lee
IEEE ACCESS (SCIE/IF: 3.476), Aug 2022

Publications - Domestic

[1] **COTS** 바이너리의 **1-day** 취약점 탐지를 위한 **Patch Presence Test** 연구
양희동, 이정우, 우승훈
한국정보보하학회 CISC-S, 2025

[2] 공급망 보안을 위한 소프트웨어 명세서**(SBOM)** 개선 연구
Youngjae Choi, Heedong Yang, and Seunghoon Woo
정보보호학회지, 2025

[3] **Web 3.0** 시대 핵심 기술**,** 블록체인 보안 위협 전망 및 분석
Seunghoon Woo, Geonwoo Lee, Taejun Lee, Yunseong Choi, Heejo Lee, Kyeongsik Min, and Jinsang Park
KISA INSIGHT, 2023

[4] 오픈소스 **SW** 취약점 분석 및 탐지기술 동향
Seunghoon Woo, Hyunji Hong, and Heejo Lee
OSIA Standards & Technology Review, 2022

[5] 공급망 보안을 위한 오픈소스 소프트웨어 취약점 관리 기술
Hyunji Hong, Seunghoon Woo, and Heejo Lee
Review of KIISC, 2022

Patent

[1] **METHOD AND APPARATUS FOR GENERATING ADAPTIVE VERSION COVERING VERSION DISTRIBUTION OF REUSED OPEN SOURCE SOFTWARE COMPONENT**
Seunghoon Woo and Youngjae Choi
APPLICATION, Korea (10-2025-0123459), Sep 2025

[2] **METHOD AND APPARATUS FOR DETECTING PROPAGATION OF SECURITY VULNERABILITIES OF OPEN SOURCE SOFTWARE INHERENT IN COMPONENTS OF TARGET SOFTWARE**
Heejo Lee and Seunghoon Woo
APPLICATION, Korea (10-2024-0023236), Feb 2024

[3] **METHOD FOR IDENTIFYING OPEN-SOURCE SOFTWARE COMPONENTS AT THE SOURCE-CODE LEVEL**
Heejo Lee and Seunghoon Woo
REGISTRATION, US (11836486), Dec 2023

[4] **METHOD FOR IDENTIFYING OPEN-SOURCE SOFTWARE COMPONENTS AT THE SOURCE-CODE LEVEL**
Heejo Lee and Seunghoon Woo
REGISTRATION, Korea (10-2476358), Dec 2022

[5] **METHOD FOR IDENTIFYING OPEN-SOURCE SOFTWARE COMPONENTS AT THE SOURCE-CODE LEVEL**
Heejo Lee and Seunghoon Woo
APPLICATION, Europe (EP21202849.2), Oct 2021

Standard

- **Structured Software Vulnerability Database Information Expression for Vulnerability Detection and Resolution**
  Heejo Lee, Seunghoon Woo, Hyunji Hong, Choonsik Park, and Yunseong Choi
  Korea (TTAK.KO-12.0384), Jun 2022

Projects (Selected)

- **Research on Intelligent SBOM Generation and Automated Vulnerability Analysis through Multi-level Code Analysis**
  Principal Investigator, Mar 2025 - Present
- **Development of Automated SBOM and VEX Verification Technologies for Securing Software Supply Chains**
  Co-Investigator, Jul 2024 - Present
- **International Collaborative Research and Global Talent Development for the Development of Copyright Management and Protection Technologies for Generative AI**
  Co-Investigator, Apr 2024 - Present
- **Development of SBOM Technologies for Securing Software Supply Chains (IITP/MSIT)**
  Researcher, Apr 2022 - Present
- **Development of Automated Vulnerability Discovery Technologies for Blockchain Security (IITP/MSIT)**
  Project Manager & Researcher & Developer, International Joint Research (ETH Zurich), Jun 2019 - Dec 2022
- **The Intelligent IoT Integrator (I3): LA Smart City Project**
  Researcher, International Joint Research (City of LA, University of Southern California, etc.), Nov 2017 - Present
- **Verifying Open-Source Software Reliability for Reinforcing Operating System Security (NSR)**
  Researcher & Developer, Apr 2020 - Oct 2020
- **Examining Software Vulnerabilities on Platform for IoT-based Home Appliance Consulting Service (KETI)**
  Researcher & Analyst, Feb 2020 - Apr 2020
- **Development of DNS-based Lightweight Framework for Addressing Abnormal Network Behaviors (KISTI)**
  Researcher & Developer, May 2018 - Oct 2018
- **A Study of a DDoS-resilient Network Architecture through Traffic Classification and Isolation (US ONR)**
  Project Manager, International Joint Research (ETH Zurich, Office of Naval Research), Sep 2017 - Sep 2019
- **Development of Vulnerability Discovery Technologies for IoT Software Security (IITP/MSIT)**
  Researcher, International Joint Research (ETH Zurich, CMU, University of Oxford), Feb 2016 - May 2018

Open-source Software Artifacts

[1] **TIVER**, A tool for identifying adaptive versions of OSS components (ICSE 2025)
https://github.com/Genius-Choi/TIVER-public

[2] **CNEPS**, A tool for discovering OSS component dependencies (ICSE 2024)
https://github.com/sodium49/CNEPS-public

[3] **V1SCAN**, A tool for discovering 1-day security vulnerabilities (Security 2023)
https://github.com/WOOSEUNGHOON/V1SCAN-public

[4] **MOVERY**, A tool for discovering propagated vulnerable codes (Security 2022)
https://github.com/WOOSEUNGHOON/MOVERY-public

[5] **V0Finder**, A tool for discovering the correct origin of software vulnerabilities (Security 2021)
https://github.com/WOOSEUNGHOON/V0Finder-public

[6] **CENTRIS**, A tool for identifying open-source software components (ICSE 2021)
https://github.com/WOOSEUNGHOON/CENTRIS-public