



# 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

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- **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

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

## WORKING EXPERIENCES

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- 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

## COMMITTEE

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

## REVIEWER EXPERIENCES

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- 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

- [1] **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
- [2] **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
- [3] **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
- [4] **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
- [5] **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
- [6] **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
- [7] **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
- [8] **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
- [9] **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

- [10] **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
- [11] **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
- [12] **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
- [13] **UDDY: 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

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- [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

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- [1] 공급망 보안을 위한 소프트웨어 명세서(**SBOM**) 개선 연구  
 Youngjae Choi, Heedong Yang, and Seunghoon Woo  
 정보보호학회지, 2025
- [2] **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
- [3] 오픈소스 **SW** 취약점 분석 및 탐지기술 동향  
 Seunghoon Woo, Hyunji Hong, and Heejo Lee  
 OSIA Standards & Technology Review, 2022

- [4] 공급망 보안을 위한 오픈소스 소프트웨어 취약점 관리 기술  
Hyunji Hong, Seunghoon Woo, and Heejo Lee  
[Review of KIISC](#), 2022

## PATENT

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- [1] **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
- [2] **METHOD FOR IDENTIFYING OPEN-SOURCE SOFTWARE COMPONENTS AT THE SOURCE-CODE LEVEL**  
Heejo Lee and Seunghoon Woo  
[REGISTRATION](#), US (11836486), Dec 2023
- [3] **METHOD FOR IDENTIFYING OPEN-SOURCE SOFTWARE COMPONENTS AT THE SOURCE-CODE LEVEL**  
Heejo Lee and Seunghoon Woo  
[REGISTRATION](#), Korea (10-2476358), Dec 2022
- [4] **METHOD FOR IDENTIFYING OPEN-SOURCE SOFTWARE COMPONENTS AT THE SOURCE-CODE LEVEL**  
Heejo Lee and Seunghoon Woo  
[APPLICATION](#), Europe (EP21202849.2), Oct 2021

## STANDARD

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- **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)

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- **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

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- [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] **VOFinder**, A tool for discovering the correct origin of software vulnerabilities (Security 2021)  
<https://github.com/WOOSEUNGHOON/VOFinder-public>
- [6] **CENTRIS**, A tool for identifying open-source software components (ICSE 2021)  
<https://github.com/WOOSEUNGHOON/CENTRIS-public>