

Geonwoo Yoon

glove2275@gmail.com
yoongunwo.github.io
+82 10-3085-5199

Research Interests

Security, Cloud-Native, Distributed Networked System, Anomaly Detection, eBPF-based Provenance

Education

Pusan National University	Busan, Republic of Korea
<i>M.S. in Computer Engineering</i>	<i>Mar. 2024 – Feb 2026 (Expected)</i>
Pusan National University	Busan, Republic of Korea
<i>B.S. in Computer Sciences and Engineering</i>	<i>Mar. 2018 – Feb. 2024</i>
<i>Served mandatory military service</i>	<i>May. 2020 – Nov. 2021</i>

Publications

- **Container-Specific Service Mesh-based System for Mitigating Lateral Movement Attacks**
Geonwoo Yoon, Jinmyeong Shin, Jae-Seok Kim, Seunghyuk Kim, Jaeyoung Jeong, Yoon-Ho Choi
IEEE Transactions on Cloud Computing, 2026. [Paper]
- **Lightweight Service Mesh for Intrusion Detection using KD-CNN in Cloud-Native Environments**
Geonwoo Yoon, Jae-Seok Kim, Seunghyuk Kim, Jaeyoung Jeong, Millati Pratiwi, Yoon-Ho Choi
ACM Cloud Computing Security Workshop (CCSW in conjunction with the ACM CCS), 2025. [Paper] [Video]
- **Automated Cybersecurity Risk Assessment and Visualization Framework for Resilient Cloud IT Asset Management**
Joonho Seo, Jinmyeong Shin, Geonwoo Yoon, Jae-Seok Kim, Yoon-Ho Choi
ACM/SIGAPP Symposium on Applied Computing (SAC), 2025. [Paper]

Under Review

- **SCALE: Risk-aware Distributed System Call Audit Framework for Cloud-Native Environments**
Geonwoo Yoon, Seunghyuk Kim, Jaeyoung Jeong, Jae-Seok Kim, Yoon-Ho Choi
Under review (double-blinded)
- **Context-Preserving Adversarial System Call Injection for Cloud Anomaly Detection Evasion**
Jae-Seok Kim, Geonwoo Yoon, Seunghyuk Kim, Joonho Seo, Yoon-Ho Choi
Under review (double-blinded)

Projects

Inhancing VPD Control Web Framework (SCOPE) <i>Developer</i>	In collaboration with LG Electronics <i>Aug. 2025 – Dec. 2025</i>
<ul style="list-style-type: none">• Optimized SCOPE framework architecture to improve scalability, stability, and code quality.• Enhanced security and accessibility through testing and user-centered UI/UX improvements.• Improved maintainability with technical documentation and framework refinement.	
PNU ZeroTrust CSRC CASB (Cloud Acccess Security Broker) [Web] <i>Developer</i>	Developed by S3Lab <i>Jul. 2024 – May. 2025</i>
<ul style="list-style-type: none">• Designed and developed a CASB to address multi-cloud access control, data leakage, and anomaly behavior.• Implemented CASB Client (VPN Client), CASB Server (Web, Logging, and Anomaly Detection Server), and CASB Agent (VPN Client, Logging).• Developed synchronization logic for AWS and Azure clouds, and monitoring functionality.	
Industrial Coating Film Defect Detection and Monitoring System <i>Developer</i>	In collaboration with GBLIGHT <i>Jul. 2024 – Dec. 2024</i>

- Implemented logic for the analysis server to control the PLC module via OPC UA communication.
- Preprocessed coating film datasets, trained detection models using YOLOv5, and deployed them to production.
- Developed the analysis server for real-time monitoring and reporting.

Web-based Psychoeducational Platform [Web] In collaboration with the Dept. Psychology, PNU
Project Manager & Developer May. 2024 – Nov. 2024

- Planned development schedules, roles, and scope as a project manager.
- Set up the initial development environment and contributed to frontend, backend, and database development.
- Deployed the platform to production and performed ongoing maintenance.

PNU Cloud RMF (Risk Management Framework).v1 Developed by S3Lab
Developer Dec. 2023 – May. 2024

- Analyzed NIST SP 800-37, SP 800-53, and SP 800-30 standards and devised strategies for cloud application.
- Designed and developed the *Select*, *Implement*, and *Assess* steps of the RMF according to NIST standards.
- Implemented automated report generation functionality.

Teaching Experience

Operating Systems Pusan National University
Teaching Assistant 1st Semester 2024

Employment

ERUTY Busan, Republic of Korea
Software Engineer Dec. 2022 – Mar. 2023

- Contributed as an early-stage developer to backend development of a 3D graphic design marketplace platform.

Honors and Awards

Spear-phishing response training mini-challenge Dec. 2023

- Awarded **Third Place** in the spear-phishing response training mini-challenge, hosted by the Ulsan Information Security Center and Korea Internet & Security Agency (KISA).

4th PATH-HACK Makerthon Feb. 2023

- Awarded **First Place** in the PATH-HACK Makerthon for developing an integrated software–hardware prototype, hosted by pathfinder & Korean Institute of Startup and Entrepreneurship Development.

Academic Excellence Scholarship 1st & 2nd Semester. 2022

National Science & Technology Scholarship 1st Semester 2018

- Merit-based national STEM scholarship awarded for outstanding scores in math and science on the Korean CSAT.

Patents

- **Geonwoo Yoon**, Yoon-Ho Choi, "METHOD AND SYSTEM FOR DETECTING ABNORMAL BEHAVIOR TO PREVENT LATERAL MOVEMENT ATTACKS IN KUBERNETES ENVIRONMENT". Korean Patent Application No. 10-2025-0067413 (Pending)
- **Geonwoo Yoon**, Yoon-Ho Choi, "ZERO-COPY BASED MAIN CONTAINER'S SYSTEM CALL COLLECTION DEVICE AND METHOD FOR USING EBPF IN KUBERNETES SECONDARY CONTAINER". Korean Patent Application No. 10-2025-0067396 (Pending)
- Jae-Seok Kim, **Geonwoo Yoon**, Yoon-Ho Choi, "EQUIPMENT CONTROL BASED VISION METHOD AND SYSTEM FOR AI-BASED DEFECT DETECTION AND DATA COLLECTION IN HIGH-SPEED AND WIDE-AREA REFLECTIVE FILMS". Korean Patent Application No. 10-2024-0133547

Skills

Languages C/C++, Python, JavaScript

Libraries Pytorch, TensorFlow, scikit-learn, React, FastAPI

Tools Docker, Kubernetes, eBPF, PostgreSQL, pgAdmin