Geonwoo Yoon

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

Research Interests

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

Education

Pusan National University — Busan, Replublic of Korea
M.S. in Computer Science — *Mar. 2024 – Feb 2026 (Expected)*

Pusan National University — Busan, Replublic of Korea
B.S. in Computer Science — *Mar. 2018 – Feb. 2024*
Served mandatory military service — *Mar. 2020 – Nov. 2021*

Publications

- **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. [Accepted]

- **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: 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)

- **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*
  Under review (double-blinded)

Projects

Inhancing VPD Control Web Framework (SCOPE) — Aug. 2025 – Dec. 2025 (Expected)
Developer — *In collaboration with LG Electronics*

- 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] — Jul. 2024 – May. 2025
Developer — *Developed by S3Lab*

- 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 — Jul. 2024 – Dec. 2024
Developer — *In collaboration with GBLIGHT*

- 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] May. 2024 – Nov. 2024

Project Mananger & Developer *In collaboration with the Department of Psychology, PNU*

- 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 Dec. 2023 – May. 2024

Developer *Developed by S3Lab*

- 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 Dec. 2022 – Mar. 2023

Software Engineer *Busan, Republic of Korea*

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

Awards

Spear-phishing response training mini-challenge Dec. 2023

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

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