Kyoungmin Roh

Seongnam, South Korea kyoungminroh01@gmail.com +82 010-2506-3409 Medium blog
Kyoungmin Roh rohkyoungmin

Summary

Cybersecurity undergraduate specializing in AI-based malware detection and secure system design. The first author of an SCI Q1-level paper under review, with hands-on experience in adversarial ML, concept drift mitigation, and Android reverse engineering. Actively engaged in CTFs and collaborative research projects. Seeking to advance security research through international graduate studies and lab contributions.

Research Interest

- Vulnerability Analysis
- Vulnerability Detection using AI
- AI for Malware Analysis and Detection

Education

Dankook University *Mar 2021 – Present*
Bacheolor of Cybersecurity

- GPA: 3.0/4.5
- Undergraduate (Currently Junior, 3rd grade)
- Expected Graduation: Feb 2027
- **Coursework:** Computer Architecture, Software Security, Internet Security, Reverse Engineering and Malware Analysis, Network and Security, Operating Systems

Experience

Research Intern *Yongin, South Korea*
CSOS Lab, Department of Software Science, Dankook University *Mar 2025 – Present*

- Supervisor: Prof. Seongje Cho
- Researched Android detection using GMM classification and cluster-wise adaptive threshold under concept drift conditions
- Developed digital forensic tools targeting IVI systems (Hyundai Avante CN7) running KitKat Android OS
- Contributed to a SCI Q1 journal paper as first author (Under Review)

Publications (SCI Papers Only)

Under Review

DART: Drift-Aware Retraining-Free Thresholding for Sustainable Android Malware Detection Jun 2025

Kyoungmin Roh, Seungmin Lee, Seongje Cho, Youngsup Hwang, Dongjae Kim

Computers & Security

Conferences

Under Review

Malware Detection via Louvain-based Community Analysis of API Co-occurrence Graphs Jul 2025

Kyoungmin Roh, Seungmin Lee

WDSC2025: 2025 Workshop on Dependable and Secure Computing

Posters

Under Review

AI-powered QR Phishing Detection and Secure QR Generation May 2025

Kyoungmin Roh, Junhyeong Kim, Minseok Seong

Department of Cybersecurity, Dankook University

Patents

Under Review

A Malware Detection Method Combining Clustering and Supervised Learning Models Jun 2025

Kyoungmin Roh, Seungmin Lee, Seongje Cho

Korea Application P2025141

The invention interview was finished on June 25, 2025.

Security Projects

In Process

Automatic Analysis Digital Forensic Tool for Hyundai Avante (CN7) *Jun 2025*

- Developing a digital forensic toolkit targeting the Hyundai Avante (CN7) IVI system running KitKat Android OS. The tool enables reliable acquisition and in-depth analysis of events and system logs generated from voice commands and touch interactions within the vehicle infotainment system.
- Role: Developer, Developing Assistant
- GitHub: https://github.com/bogamie/Log
- Tools Used: C# (Wintools)

LV.0: LLM Vulnerability Zero – LLM-powered Security Vulnerability Reporter for Open Source Projects *Jul 2025*

- Developing a web-based tool that detects, explains, and reports security vulnerabilities in open-source projects using LLMs and static analysis tools.
- Key features include GitHub integration, automated risk assessment, and natural language report generation.
- Contributed to the team as a leader of the team, AI development, and Security Development.
- GitHub: https://github.com/Gaurdians-of-the-Open-Source
- Figma: https://www.figma.com/Open-source-Developer-Competition
- Tools Used: HTML, TailwindCSS, React, Python, Docker, MongoDB, FastAPI, Flask, Deepseek

Finished Project

ASX: Android API Sequence Extractor *Jun 2025*

- Static Android APK analyzer designed to extract method-level API call sequences from DEX files.
- Supports multi-instance learning (MIL) by producing multiple API sequences per APK, each corresponding to an individual method.
- For each method in the APK, the tool extracts invoked API calls using DEX-level invoke-* instructions.
- The API calls are abstracted at the class level.
- After the API sequences are extracted, the tool automatically filters out trivial methods based on name and class prefixes, retaining only the top 30 most extended and most meaningful API sequences to minimize noise and sequence overload.
- Developed as a modern, desktop-style interface

- GitHub: https://github.com/rohkyoungmin/api-sequence-extractor-gui
- Tools Used: HTML, CSS, Electron, Python

Qrust: Secure QR code Generation and AI-based QR phishing Detection App *Mar 2025 - Jun 2025*

- Developed a mobile app using Flutter to scan and generate QR codes securely.
- Integrated a phishing URL classifier using a Flask-based QR phishing detection AI model. (Building a Phishing URL Detection API with Machine Learning and Flask)
- Applied HMAC-based digital signature to prevent QR code overlay attacks and ensure the authenticity of generated QR codes.
- After the API sequences are extracted, the tool automatically filters out trivial methods based on name and class prefixes, retaining only the top 30 most extended and most meaningful API sequences to minimize noise and sequence overload.
- Designed full UI/UX architecture and led frontend app implementation, and developed Security modules (HMAC digital signature, QR phishing Detection AI).
- GitHub: https://github.com/dku-capstone
- Figma: https://www.figma.com/DKU-Security-Capston
- Tools Used: Flask, Vercel, Java, Docker, Spring Boot, MongoDB, Redis, minio, Oracle DB, Flutter

Post-Quantum Signature System: Lamport + Merkle Tree *Aug 2023 - Sep 2023*

- Implemented a quantum-resistant digital signature scheme using Lamport one-time signature and Merkle tree structure in Python.
- Simulated key generation, signing, and verification processes.
- Demonstrated potential applicability of hash-based signatures in post-quantum cryptographic systems.
- Awarded First Prize in a university cryptography competition sponsored by the National Intelligence Service (NIS).
- GitHub: https://github.com/rohkyoungmin/Post-Quantum-Signature-System
- Tools Used: Python

Development Projects

AIRO: LLM-based Parenting Assistance App *May 2025 - Jun 2025*

- Designed a secure and intelligent parenting assistant mobile app to address information fragmentation, emotional isolation, and emergency response deficiencies in early childcare.
- Integrated Meta LLaMA 3 as the generative AI for real-time parenting guidance, symptom assessment, and daily routine automation.
- Tools Used: LLaMA 3, python

Selenium-based Web Crawling Script *Apr 2025*

- Developed a selenium-based web crawling Python script that crawls the product reviews from Today's House.
- Contributed to an LLM-based research project at another university's design lab by developing a Selenium-based web crawler.
- GitHub: https://github.com/rohkyoungmin/web_crawling
- Tools Used: Python, Selenium

Deep Learning-based Agricultural Pest Detection Model *Nov 2024*

- Designed a CNN-based image classification model to detect pest damage in crop images captured by standard cameras.
- Applied image preprocessing and data augmentation (resize, rotate, crop, brightness adjustment).
- GitHub: https://github.com/rohkyoungmin/smart-greenhouse-disease-detector
- Tools Used: Python, Google Colab

Extracurricular Trainings

LG Aimers AI Bootcamp & Hackathon *Jan 2023 - Feb 2023*

- Completed a competitive AI training program focused on real-world industrial applications.
- Developed a defect classification model for smart factory products; ranked top 30% in final evaluation.
- Successfully coordinated task allocation and model design as a leader of the team.

Extracurricular Experiences

Member of Aegis *Mar 2021 - Present*

- A software development and cybersecurity club at Dankook University.
- Aegis Cybersecurity team member
- Aegis CTF team member; Participated in Several CTFs as a team.

Running a Tech Blog *Apr 2025 - Present*

- Running a personal technology blog that covers topics related to AI, cybersecurity, and software development.
- Website: https://medium.com/@kyoungminroh01

OSINT TEAM *Jul 2025 - Present*

- Contributed as Publication Contributor.
- Selected as a contributing writer for OSINTTeam.com, a global OSINT education and publication platform.
- Writing technical articles on threat intelligence, digital footprint analysis, and open-source investigation tools.
- Engaging with international practitioners to promote practical OSINT techniques in cybersecurity contexts.
- Website: https://www.osintteam.com/

CTF Participation

HACKSIUM BUSAN 2025 Preliminaries *28 Jun 2025*

- Ranked 31th out of all participating teams.
- Contributed to the team by solving three web and cryptography problems.
- Participated as the leader of the team.
- Review & Writeups: https://medium.com/@kyoungminroh01/list/hacksium-busan-2025-1e9a0a91fc6b

BYUCTF 2025 *17 May 2025 - 18 May 2025*

- 270th/1074th
- Contributed to the team by solving six reverse engineering, cryptography, and misc problems.
- Review & Writeups: https://medium.com/@kyoungminroh01/list/byuctf-2025-7c62b2540794

HacktheOn Sejong CTF 2025 Preliminaries *26 Apr 2025*

- 42nd/401th (top 10%)
- Participated in the CTF as the team.
- Contributed to the team by solving two reverse engineering and forensic problems.
- Review & Writeups: https://medium.com/@kyoungminroh01/list/hacktheon-sejong-2025-ctf-d42d93286e14

squ1rrer CTF 2025 *6 Apr 2025 - 7 Apr 2025*

- 75th/528th
- Contributed to the team by solving three Web and Misc CTF problems.

Awards

Cryptography Competition *Sep 2023*

- Awarded by the Department of Cybersecurity, Dankook University.
- Awarded First Place Prize

Certifications

Language *Sep 2023*

- TOEIC: 870

Technologies

Languages: Python, C/C++, Java, JavaScript, SQL, Kotlin, HTML, CSS

Frameworks & Libraries: Flask, PyTorch, Scikit-learn, React.js, Flutter, Tailwind CSS

Tools & Platforms: Git, GitHub, Android Studio, Jupyter Notebook, Google Colab, Figma, Adobe Photoshop

Security & AI: Reverse Engineering, Malware Analysis, GNN, CNN, Adversarial ML, OSINT Tools

Military Service

KATUSA (Korean Augmentation to the U.s. Army) *7 Aug 2023 - 6 Feb 2025*

- U.S. 8th Army, Camp Carroll, South Korea
- 35th Brigade, 2-1 Air Defense Artillery Battalion, Echo Company
- Served as interpreter and liaison for joint U.S.–ROK operations, enabling cross cultural communication and mission support.
- Demonstrated strong adaptability, discipline, and accountability in a high-security military environment.
- Got a Battalion-level Environmental Officer Certification.
- Won the Battalion-level Best Warrior Squad Competition.
- Received a formal Army Commendation Medal (ARCOM) from a U.S. Brigadier General for exceptional performance and leadership.
- Received the Best KATUSA Award from a ROK Battalion Commander at USAG Daegu.