Secure and Reliable Systems Lab

Dae R. Jeong (정대룡)

Dept. of Computer Science and Engineering, Seoul National University

Dae R. Jeong (정대룡)

https://daeryong.me

RESEARCH AREA

- Automating vulnerability detection

- Reproducing and diagnosing system failures

- Mitigating attacks and system hardening

- Formally verifying security properties of systems

ACADEMIC DECREES

Ph.D.   School of Computing,   KAIST

M.S.   School of Computing,   KAIST

B.S.   Dept. of Computer Science,   KAIST

Research Interests

We are dedicated to making systems more *secure and reliable*

Designing and building secure & reliable systems

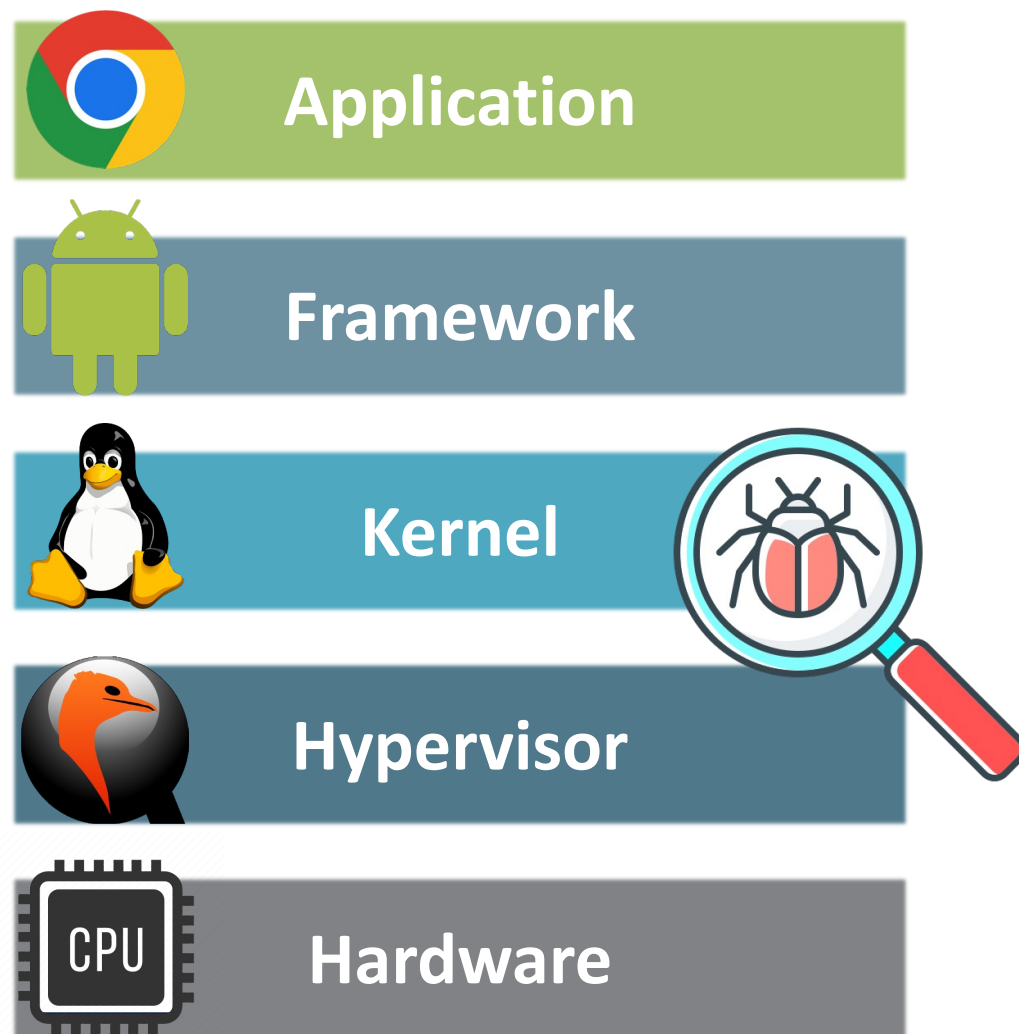*Identifying vulnerabilities in systems*

Mitigating and preventing vulnerabilities in systems

Building Secure & Reliable Systems

- Ensuring security and reliability requires a holistic approach, spanning hardware, operating systems, and applications

- Our goal is to build systems that maintain integrity, availability, and confidentiality in the face of emerging threats

- By leveraging emerging architectural support, such as memory safety mechanisms and trusted execution environments, we enhance systems security

Detecting Vulnerabilities in Systems

Application

Framework

Kernel

Hypervisor

Hardware

- Security vulnerabilities exist at all layers, from hardware such as CPUs to high-level applications like Chrome

- Our goal is to develop comprehensive detection methodologies that identify vulnerabilities across the entire system stack

- By integrating static analysis, fuzzing, formal verification, and AI-driven techniques, we enhance security resilience of existing systems

Mitigating Vulnerabilities in Systems

- Vulnerabilities are prevalent across various systems, affecting industries such as finance, healthcare, critical infrastructure, and cloud computing

- We aim to develop robust strategies to mitigate and respond to vulnerabilities, enhancing system resilience even in the presence of vulnerabilities

- Our approach includes AI-assisted automated patching, fault- and attack-tolerant design, and impact confinement to strengthen system security

For Prospective Students

- We are always looking for motivated and prospective students at all levels, including M.S., Ph.D. and undergraduate interns

    - Whether you're interested in **_CTF-style offensive hacking_** or tackling **_cutting-edge research challenges_**, there are opportunities to get involved

- If you are interested in collaborating with me, please feel free to reach out to me. I'm always open to talking to you!

    - Please refer to https://daeryong.me