

Resume

Unsung Lee

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Education

2012 - Present	Ph.D in Computer Science and Engineering (CSE)	POSTECH
	System Software Laboratory (Advisor: Prof. Chanik Park).	
2008 - 2012	B.S. in Computer Science and Engineering (CSE)	POSTECH

Research Interests

- System Software
- Virtualization
- Embedded System
- System Security

Publications

- 2020 **Unsung Lee** and Chanik Park, “SofTEE: Software-Based Trusted Execution Environment for User Applications,” IEEE Access 8: 121874-121888.
- 2018 Mirae Lim, **Unsung Lee**, and Chanik Park, “Verifying the integrity of sensing data through hardware TPM (Korean: 하드웨어 TPM을 이용한 센서 데이터 무결성 증명),” KCC.
- 2017 Sejin Park, Byungsu Park, **Unsung Lee**, and Chanik Park, “Virtualizing Graphics Architecture of Android Mobile Platforms in KVM/ARM Environment,” IEICE Trans. Inf. Syst. 100-D(7): 1403-1415.

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2014 Byungsu Park, **Unsung Lee**, Sejin Park, Chanik Park, Woosung Kim, Hyejin Cho, and Gyueun Lee,
“Driving GPU devices in Android platform through KVM/ARM (Korean: 안드로이드 호스트 기반 KVM/ARM 가상화 환경에서의 GPU 디바이스 구동기법),” KCC.

Research Projects

- | | |
|------------------------|--|
| Apr. 2017 – Dec. 2018 | Developing high performance/high reliability blockchain for decentralized autonomous IoT platform <ul style="list-style-type: none">● Analyzed existing Trusted Execution Environment (TEE) solutions (e.g., ARM TrustZone and Intel SGX)● Supported software-based TEE for IoT devices● Developed a software TPM called kernel-based TPM (a.k.a. kTPM) |
| Apr. 2016 – Aug. 2017 | To develop CertiKOS for ARM platform first and to extend CertiKOS for GPU device <ul style="list-style-type: none">● Supported CertiKOS on multi-core environment.● Developed CertiKOS hypervisor for ARM platform. |
| Mar. 2015 – Feb. 2017 | Supporting dual OSes (high reliability OS/high performance OS) simultaneously in multi-core environments <ul style="list-style-type: none">● Supported u-hypervisor on multi-core environment.● Supported device drivers to run a RTOS on NVIDIA-TK1 board (multi-core environment).● Supported RTOS and Linux kernel simultaneously using u-hypervisor.● Supported GPU device sharing between dual OS (RTOS and Linux kernel) |
| Aug. 2013 – July. 2014 | Development of 2D/3D Virtualization technology for multiple Guest OSes based on virtualized environment. <ul style="list-style-type: none">● Analyzed Android graphics internal<ul style="list-style-type: none">■ Android Hardware Abstraction Layer (HAL): HWComposer and Gralloc■ Linux device driver: vsync, display driver, fence, GPU driver, ION driver (display buffer manager) |

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- Supported graphics sharing between two different Android OSes in KVM/ARM environment.

Programming Skills

- **Languages**
 - **Expert** C/C++, Bash, ARM assembly
 - **Familiar** Python
- **Hardware Platform**
 - **Expert** ARM platform(ARMv6, ARMv7, ARMv8, and ARM FastModels)
 - **Familiar** Intel x86
- **Operating Systems**
 - **Expert** Linux kernel-based OS (e.g., Android and mobile Ubuntu)
 - **Familiar** RTOS
- **Software Tool**
 - **Expert** KVM/Qemu, Trusted Platform Module (TPM)
 - **Familiar** Debugging tool (GDB, Trace32)

Teaching Experience

- Teaching Assistant
 - Operating Systems (CSED312), Fall 2013
 - Digital System Design (CSED273), Spring 2014