KOU Zili

kouzili.github.io
zkou@connect.ust.hk
☎ (+86) 15651723602
KOU_Zili

Education

Hong Kong University of Science and Technology, Hong Kong SAR, China — 2019.08 – Now
PhD Candidate, Electronic & Computer Eng., Supervised by Prof. ZHANG Wei

Alibaba DAMO Academy, Computing Technology Lab, *Research Intern* — 2022.06 – 2022.11

Southeast University, Nanjing, China, *Bachelor*, Electronics Sci. & Eng., GPA 3.94/4.0 — 2015.08 – 2019.06

First-Authored Research

Practical Cache Covert Channel on Modern GPUs — 2023.02 – 2023.08

- First to emphasize the practicality, not the performance in theory, of covert channel on GPUs
- Applied to a wide range of commercial GPUs, achieving stable and fast communication
- Under paper writing

GPU Framework for Hybrid and Efficient Fully Homomorphic Encryption — 2022.06 – 2023.01

- CUDA-Accelerate the hybrid FHE scheme that supports both linear and nonlinear operations
- Achieve hundreds times of speed-up, making FHE practical
- Under double-blind reviewing

Cache Attacks and Defenses of the Sliding Window Algorithm in TEEs — 2021.12 – 2022.05

- Scrutinize implementations of the sliding window algorithm in RSA
- Reveal a new vulnerability in the latest Mbed TLS design
- Assigned CVE-2022-46392 as the public identifier
- Accepted by DATE 2023

Attack Directories on ARM big.LITTLE Processors — 2021.02 – 2021.11

- Reverse engineer the Snoop Filter (SF) built in Arm CCI-5XX.
- Comprehensive methodology to exploit the SF as a new side channel
- Best Paper Award
- Accepted by ICCAD 2022

Precise Framework for Side-channel Attacks on Arm TrustZone — 2020.03 – 2021.01

- Single profiling trace attack on RSA, breaching the exponent blinding defense.
- Target on reference implementation TF-A + OPTEE + Mbed TLS
- Assigned CVE-2021-36647 as the public identifier
- Accepted by DAC 2021

Skills

- Programming Languages: C/C++, CUDA, Python, Verilog
- Engineering Scope: Linux Kernel, ARMv8 ISA, Gem5, FHE, TEE

Honors and Awards

William J. McCalla ICCAD Best Paper Award	2022
HKUST RedBird Academic Excellence Award	2022 & 2023
Baowu Steel Excellent Student Award (4 undergraduate students per year)	2019
National Scholarship, President Scholarship (Top 1%)	2018

Activities

- Sub-Reviewer: TCAD, TRETS, TVLSI, TECS, FCCM, FPL, CASES, ASPDAC, etc.
- Student Helper: FPT 2022, EDAthon 2020