

ASMITA

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EDUCATION

PhD Candidate in Electrical & Computer Engineering

University of California, Davis

Sept 2021 - Present

Research: Embedded firmware security — Firmware fuzzing

Graduate student researcher & Teaching assistant : Embedded system courses (EEEC007, EEC172)

MS in Electrical & Computer Engineering

University of California, Davis

2021-23

Relevant courses : Computer security, Hardware security, Embedded computing, Computer architecture, Machine Learning, Digital system testing, Internet of Things (IoT) (GPA: 3.95)

BE in Electronics Engineering

International Institute of Information Technology, Pune, India

2014-18

SKILLS

Python, C, Firmware static & dynamic analysis, Fuzzing, Emulation, Firmware reverse engineering, Embedded systems, Firmware security — IoT security— Embedded security

WORK EXPERIENCE

Netrise, USA

Firmware Security Intern

Summer 2023

- R&D on IoT firmware fuzzing, exploring AFL++, LibFuzzer, LibAFL, OSS-Fuzz and Investigating LLM in fuzzing. — Assisted Netrise to get started with initial test prototype for inclusion of firmware fuzzing in their framework and testing of 263 Busysbox packages with this.

Netrise, USA

Firmware Security Intern

Summer 2022

- Research and implementation for Control Flow Graph-based static analysis and prototyped binary function similarity using Python. — Assisted in identifying third-party software components in approx 500 firmware targets.

Payatu, India

IoT Security Consultant

Oct'19 to Sept'21

- Embedded hardware and firmware security assessments including IoT protocol, and basic side-channel & fault injection attacks. — Conducted security assessments on diverse IoT products, including smart cameras, medical devices, access control systems, wireless modems, and ECUs. — Served as a security architect for an automotive client, integrating security into product design.

- Trainer for IoT Hacking Training — Trained approx 50-100 participants at Nullcon, CPX360 Checkpoint.

PUBLICATIONS

1. R. Tsang, D. Joseph, A. Asmita, S. Salehi, P. Mohaptra, H. Homayoun. "FANDEMIC: Firmware Attack Construction and Deployment on Power Management IC and Impacts on IoT Applications." NDSS 2022.
2. R. Tsang, D. Joseph, A. Asmita, S. Salehi, P. Mohaptra, H. Homayoun. "FFXE: Dynamic Control Flow Graph Recovery for Embedded Firmware Binaries." Usenix 2024 (Accepted).

ACHIEVEMENTS

- Google Pixel watch root access : HardPwn Contest by Google. May 2023
- IEEE Best Teaching Assistant (TA) Award, UC Davis. Sept 2022
- Best Outgoing Student & Academic Topper Award. June 2018
- Best Paper Award at CEET, Kuala Lumpur, Malaysia. April 2018
- AIT-Tiger Leong International Innovation and Leadership Camp. July 2017
- Invited talks and workshops : asmitaj08.github.io/trainings-and-talks/