Ankita Kumari

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EDUCATION AND TRAINING

OCT 2019 – CURRENT – Munich, Germany
MASTER OF SCIENCE IN COMMUNICATIONS ENGINEERING – Technische Universität München, Munich

Courses: : IoT Security | Embedded Systems & Security | Physical Unclonable Functions | Software Architecture for Embedded Systems | Quantum Computers and Secure Communications | Broadband Communication Network | VHDL Lab | Software Defined Networking | Machine Learning

1.8

AUG 2013 – MAY 2017 – Jamshedpur, India
BACHELORS OF TECHNOLOGY IN ELECTRONICS AND COMMUNICATION ENGINEERING – National Institute of Technology

CGPA : 9.18/10
Relevant Coursework: Embedded Systems, Digital Communication, Data Structure and Algorithms, Data Communication & Networking, Microprocessor and Interfacing, VLSI Design, Control Systems

WORK EXPERIENCE

1 SEP 2021 – CURRENT – Augsburg, Germany
MASTER THESIS – INFINEON

- Evaluating the usability of Rust on deeply embedded microcontrollers on the basis of Performance, Usability, ease of implementation and Security in comparison with C on PSOC6 microcontrollers.

1 MAY 2021 – 31 AUG 2021 – Ladenburg, Germany
RESEARCH INTERN – ABB

- Performance analysis of security protocols on resource constraint devices to provide network security and overcome denial of service attacks

1 AUG 2020 – 30 APR 2021 – Munich, Germany
WORKING STUDENT – INFINEON TECHNOLOGIES

- Unit Test Integration using Tessy with Keil µvision as slave and output the result on XMC4700.
- Integration testing of Embedded Firmware using PyVerify.
- Serial Communication with CortexM devices.

1 JUL 2020 – CURRENT – Munich, Germany
UNIVERSITY RESEARCH ASSISTANT – FRAUNHOFER AISEC

- Emulating Cortex M33 with Qemu using a Rust and C programming language
- Implementation of Rust function being called from secure world in Embedded C to a non secure world.
- Worked with Trustzone on Cortex M33 for securing Embedded operating system

JUL 2017 – SEP 2019 – Noida, India

SOFTWARE DEVELOPER – ADOBE SYSTEMS

- Developing features for video player support and Ad Insertion using Java
- Written scripts to automate certification workflows using JavaScript and Python.
- Designing a stream simulator for creating a live HLS stream using Python.

DIGITAL SKILLS

Programming Language

Rust (Programming Language) | Embedded C | PYTHON | C | Java Programming language

Scripting Languages

BASH | Python

Tools and Technologies

QEMU | GIT (GitHub) | Management tools (JIRA Confluence) | Tessy | IOT security | Selenium | Keil | Jenkins | Trustzone

PROJECTS

Projects

Attacking the server secured with RSA and One Time Pad Cryptography algorithms.
As part of the Capture the Flag, wrote python scripts to attack the server using the vulnerability of the cryptography algorithms used.

Design of Secure Key Storage using Rust and Trustzone
Integration of Rust in an Embedded C application to tackle the security vulnerabilities of Trustzone Architecture.

Implementation of AES algorithm using VHDL
Implemented the AES algorithm with 128bit key in VHDL

Implementation of Distributed Control Plane like HyperFlow
Implementing a distributed controller network based on master-slave-equal role of controllers. Also modified RYU controller to act as a Firewall and as Load Balancer using Python

Smashing the stack for Fun and Profit
Buffer overflow attacks on XMC4500 to change the course of function and light the LEDS as well as achieving the same with MPU implementation using Embedded C. HW Debugging with GCC

HIDe your password?
Cracking the authentication using HID keyboard as a side channel attack and once logged in to the system, created new files in the user´s home directory. Coded in Embedded C.

Training a system to help Keep Track of Training and suggest improvements in Ball Sports
The ball contains a motion detection technology. It collects and reports data on the web such as force, trajectory, spin, number of passes and number of touches. Then uses this data to provide coaching cues to help you improve your game. (Arduino programming, Python)
https://devpost.com/software/trainer-42tda7

HONOURS AND AWARDS

Honours and awards

- Holder of Deutschlandstipendium, German National Scholarship Program by TUM
- Third Prize holder at HackaTUM´19 for problem statement of MicroFuzzy.
- Promoted to senior software engineer role within a year of joining Adobe.
- Special contribution award at Adobe Systems for my efficient performance.