Jasper Rühl

24.07.1998

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EXPERIENCE

Working Student May 2023 - Nov 2023
Guardsquare
prototyped dependency detection feature for iOS AppSweep Python, C++
+ Cocoapods projects are automatically built, output is parsed and analyzed
+ statically linked libraries are successfully detected
+ each symbol of the iOS app is matched to its origin (native or external library)
+ containerized app for isolation using Docker
+ feature will be deployed to AppSweep

Working Student Mar 2022 - April 2023
Controlware
DevOps for SOC team's *TheHive* Infrastructure, creating various tools Python
+ Incident importers for several XDR platforms (MS Defender/Azure, SentinelOne, Cortex XDR)
+ introduced GitLab runners to automatically deploy updates on the testing VMWare machines
+ introduced function decorator to make our python programs significantly more fault resilient
+ created Jupyter Notebook for visualizing summaries presented to customers

Research Assistant Jan 2021 - Dec 2021
Fraunhofer AISEC
aided in development of an LLVM based MemSafety tool C++, Python
developed PoC's for anti-ControlFlowIntegrity exploitation techniques (DOP, COOP, LOP)

Student Tutor WS21-22 / WS22-23
Chair of IT Security
hosted weekly tutorials on the `IT Security` lecture
+ presented and taught students about the fundamentals of IT Security
+ classes ranged from 5-25 students

PROJECTS

Congestion Control for Application Flows on Shared QUIC connections Master Thesis Jan 2024 - Sep 2024
explore methods to enable lower latency for realtime communication Go
+ add a stream prioritization mechanism to quic-go
+ bitrates of stream classes are measured and adapted in realtime

Risotto: A DBT for Weak Memory Models Guided Research published at ACM ASPLOS 2023
improved emulation of x86 `cmpxchg` instruction on ARM architectures C
+ introduced a new `CAS` instruction for QEMUs TCG
+ appropriate ARM instruction is generated
+ dl.acm.org/doi/10.1145/3567955.3567962

Raspberry Pi VPN Endpoint Interdisciplinary Project SS23
Gürtler & Roach Cybersecurity
developed program to setup Raspberry Pi microcomputers
+ Pi's are a tailscale exit node
+ Access Control List ensures no outgoing connections from the Pi
+ *Ansible* is used to automatically setup the Pi

Forkever Bachelor Thesis SS20
GDB-like debugger for binary exploitation Python, C
+ create copies of program-state by injecting `fork` system calls
+ memory can be visualised and manipulated with a hexeditor
+ Forkever is used by the students of the binary exploitation lab course
+ github.com/haxkor/forkever

EDUCATION

MSc. Informatics 2021 - 2024
Technical University Munich
focus on security and computer architecture

BSc. Informatics 2016 - 2020
Technical University Munich
Minor: Mathematics
Grade: 2.2

BSc. Computer Science - Exchange Semester 2018 - 2019
Malaysia Multimedia University, Cyberjaya

SKILLS

Programming Languages	Python, Go, C, C++, Bash, Java, R
Technologies	Linux, git, GitLab, Docker, Ansible, QEMU, VSCode
Languages	German, English, Malay (basic)

PERSONAL

MINGA 2017 - 2020
Mentor for two international students at TUM

English tutor 2013 - 2015
Assisted in teaching pupils