Jakob **Koschel**

PHD STUDENT · VUSEC

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Summary

I am a 4th year PhD student at the Systems and Network Security Group of the Vrije Universiteit Amsterdam. My research interests are system security, operating systems, side-channels, microarchitectural attacks and memory safety.

Experience

Google *Zürich*
SOFTWARE ENGINEER INTERN *Oct. 2023 - Jan. 2024*
- Working on regression testing for speculative execution attacks.
- Analyzed and tested if current mitigations against the Inception attack are sufficient.
- Assisted with researching the architectural bug Reptar.

IBM Research *Zürich*
SYSTEM SECURITY RESEARCHER INTERN *Jun. 2023 - Sep. 2024*
- Research on automatic exploit generation in the Linux kernel.
- Facilitating dynamic analysis with compiler instrumentation and fuzzing with a customized Syzkaller.

Catenda AS *Oslo*
LEAD MOBILE DEVELOPER *Oct. 2019 - Jan. 2020*
- Co-lead a team of four developers building a React-Native app from ground up.

Settle *Oslo*
MOBILE DEVELOPER *Jun. 2016 - Aug. 2019*
- iOS and Android native development for a security sensitive mobile payment app.

Education

Vrije Universiteit (VUSec) *Amsterdam*
PHD IN COMPUTER SCIENCE *Feb. 2020 - PRESENT*
- Topic: Microarchitectural Attack Surface Analysis and Reduction
- Supervisor Herbert Bos, Co-supervisor: Cristiano Giuffrida
- Research in microarchitectures attacks and systems, facilitating kernel debugging and compiler passes

Vrije Universiteit *Amsterdam*
MSC IN COMPUTER SCIENCE (COMPUTER SYSTEM SECURITY) *Sep. 2017 - Aug. 2019*
- Graduated cum laude (Grade Point Average: 9.2[1])
- Thesis: Speculative Dynamic Analysis: Vulnerability and Gadget Finding in the Spectre Era, Grade: 9.5
- Best Student: Secure Systems, Binary and Malware Analysis, Kernel Programming

Open source experience

Linux kernel
Submitted patches to various different subsystems of the Linux kernel, responding to feedback and criticism appropriately, resulting in most patches (around 90) being accepted by the maintainers of the respective subsystems.

LLVM project
Submitted a patch to llvm-project to enable plugin support for the new pass manager with LTO. Released in LLVM 15.

Practical skills

Skills	Binary analysis, LLVM (IR & Backend), Linux kernel
Programming Languages	C, C++, Python, Assembly (x86, ARM64), JavaScript
Tools	Ghidra, gdb, git, LaTeX
Languages	German, English

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[1] Grading scale 1-10. A mark 9 is only awared in 2.7% of cases, a mark 10 in only 0.1% of cases (link: 🔗 Grading System in the Netherlands).