

Jakob Koschel

PHD STUDENT · VUSEC

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Summary

I am a 4rd 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.

Publications

Uncontained: Uncovering Container Confusion in the Linux Kernel

J. KOSCHEL, B. JOHANNESMEYER, K. RAZAVI, H. BOS, C. GIUFFRIDA

USENIX Security URL: https://download.vusec.net/papers/uncontained_sec23.pdf

Anaheim

Aug. 2023

Kasper: Scanning for Generalized Transient Execution Gadgets in the Linux Kernel

J. KOSCHEL, B. JOHANNESMEYER, K. RAZAVI, H. BOS, C. GIUFFRIDA

NDSS URL: https://download.vusec.net/papers/kasper_ndss22.pdf

San Diego

Apr. 2022

TagBleed: Breaking KASLR on the Isolated Kernel Address Space Using Tagged TLBs

J. KOSCHEL, C. GIUFFRIDA, H. BOS, K. RAZAVI

EuroS&P URL: https://download.vusec.net/papers/tagbleed_eurosp20.pdf

all-digital

Sept. 2020

Education

Vrije Universiteit (VUsec)

PHD IN COMPUTER SCIENCE

- Topic: Microarchitectural Attack Surface Analysis and Reduction
- Promotor: Herbert Bos
- Co-supervisor: Cristiano Giuffrida
- Research in microarchitectures attacks and systems, facilitating kernel debugging and compiler passes

Amsterdam

Feb. 2020 - PRESENT

Vrije Universiteit

MSC IN COMPUTER SCIENCE (COMPUTER SYSTEM SECURITY)

- Graduated cum laude (Grade Point Average: 9.2¹)
- 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

Amsterdam

Sep. 2017 - Aug. 2019

Eberhard Karl University

BSC IN COMPUTER SCIENCE

Tübingen

Oct. 2013 - May. 2017

Presentations

Linux Plumbers Conference 2022

PRESENTER FOR <LPC 2022>

- Presented how I started chasing speculative type confusion bugs in the kernel and ended up with 'real' ones (URL: slides)

Dublin

Sep. 2022

IEEE European Symposium on Security and Privacy 2020 Conference

PRESENTER FOR <EURO S&P 2020>

- Presented a new side-channel attack breaking KASLR with Kernel Page Table Isolation (KPTI) enabled by reverse engineering the TLB layout.

all-digital

Sep. 2020

Practical skills

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

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

Experience

Catenda AS

LEAD MOBILE DEVELOPER

- Co-lead a team of four developers building a React-Native app from ground up

Oslo

Oct. 2019 - Jan. 2020

Settle

MOBILE DEVELOPER

- iOS and Android native development for a security sensitive mobile payment app

Oslo

Jun. 2016 - Aug. 2019

University of Oslo

ERASMUS EXCHANGE SEMESTER

- Operating System Course (20 ECTS). Grade: A

Oslo

Jan. 2016 - Jun. 2016

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 80) 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.