MARIUS FLEISCHER

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EDUCATION

Doctor of Philosophy – Computer Science   **09/2021 - 2025** (expected)
University of California, Santa Barbara   Santa Barbara, US

- GPA: 4.0
- Advisors: Giovanni Vigna, Christopher Kruegel
- Graduate Teaching Assistant: Computer Security
- Relevant coursework: Machine Learning, Machine Learning on Graphs, Special Topics in Deep Learning, Runtime Systems, Software Fuzz Testing, Advanced Topics in Distributed Systems, Quantitive Information Flow

Bachelor of Science – Computer Science   **10/2017 - 08/2021**
Friedrich Alexander-University Erlangen-Nuremberg   Erlangen, Germany

- Graduated with distinction
- Undergraduate Teaching Assistant: Systems Programming, Fundamentals of Computer Engineering
- Related coursework: Data Structures and Algorithms, Systems Programming, Software Reverse Engineering, Computer Forensics, Applied Hacking, Parallel and Functional Programming, Computer Architecture

Study Abroad   **07/2019 - 01/2020**
Queensland University of Technology   Brisbane, Australia

- Grades: high distinction

EXPERIENCE

Graduate Student Researcher   **10/2021 - Present**
University of California, Santa Barbara   Santa Barbara, US

Research Assistant   **10/2020 - 08/2021**
Friedrich Alexander-University Erlangen-Nuremberg   Erlangen, Germany

PROJECTS

Linux Kernel Fuzzing (accepted at USENIX 2023)   **10/2021 - 08/2023**

- Designed and implemented a new SOTA kernel fuzzer called Actor that performs better than syzkaller using targeted kernel instrumentation and a custom compiler plugin (LLVM)
- Discovered and reported 41 vulnerabilities in the Linux kernel of which 9 were fixed by developers

Speech Style Transfer   **Fall 2022**

- Developed a one-click pipeline for speech style transfer based on SOTA models AutoPST, AutoVC
- Evaluated the model performance on a multi-accent name dataset. The project was demoed live with real-world data and won the best application prize at UC Santa Barbara among 50+ graduates. Later published at Interspeech 2023

Fake News Detection   **Spring 2022**

- Developed an end-to-end data collection pipeline using the Twitter API v1 and v2 that generates a dataset for Graph Neural Network (GNN) models starting from a set of root tweets
- Evaluated the performance of existing GNN models (developed in PyTorch) on multiple social media datasets

Mobile Device Bootloader Rehosting   **03/2021 - 07/2021**

- Created a framework called ReBoot for rehosting bootloaders of mobile devices based on avatar^2, QEMU and Unicorn
- Analyzed the firmware encryption and the TrustZone Protection Controller on a Huawei P20 Lite using ReBoot
- The project played a foundational role for further research to analyze other components of the secure bootchain

Fuzzing Trusted Execution Environments   **10/2020 - 08/2021**

- Developed and implemented a pipeline for type recovery of Secure Monitor Calls on Android smartphones
- Designed and built a tool to extract library dependencies across multiple programming languages on Android
- The project served as a backbone to TEEzz, a SOTA Trusted Execution Environment fuzzer published at S&P 2023

SKILLS

Programming: C, Go, Python, CodeQL, Java, C++, C#, Assembly, Bash, SQL, Scala, R
Technologies: Docker, QEmu, Unicorn, PyTorch, Twitter API, Git, Ghidra, GDB/GEF **OS:** Linux, Windows
Languages: German (native), English (fluent, TOEFL iBT: 117/120), Hindi (elementary)

SERVICE

FAUST CTF service author   2021, 2022
Decompetition service author   2022