# MARIUS FLEISCHER

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## EDUCATION

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| **Doctor of Philosophy – Computer Science** | **09/2021 - Present** |
| *University of California, Santa Barbara* | Santa Barbara, US |

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

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| **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

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

- Grades: high distinction

## EXPERIENCE

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| **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

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

- 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

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| **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

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| **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

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| **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

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| **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, 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

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| FAUST CTF service author | 2021, 2022 |
| Decompetition service author | 2022 |