Victor Bieszka

Curriculum Vitae

PERSONAL

Birthday	06.12.1991
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EDUCATION

Master Computer Science — 2021 - 2023

Technische Universität Berlin

- Specialisation: Compiler design and database management systems
- Thesis: "Towards the Fast and Secure Execution of User-Defined Functions in Stream Processing Engines"

Bachelor Computer Science — 2014 - 2021

Technische Universität Berlin

- Specialisation: Distributed systems and cloud/network technologies
- Thesis: "Evaluating the influence of the ORTC algorithm on network reachability computation and space complexity using binary decision diagrams"

Bachelor Economics — 2011 - 2014

Universität Mannheim

- Specialisation: Game Theory and Micro Economics
- Thesis: "An Analysis of Stock Reports when Financial Analyst's Incentives are Uncertain"

Abitur — 2002 - 2010

Katholisches Gymnasium Sankt Ansgar in Hamburg

WORK EXPERIENCE

Database & Compiler Engineer — Since 07.2021

NebulaStream

- Work on the IoT stream processing engine *NebulaStream*, contributing to the query compiler and the virtualization stack
- Tech-Stack: C++, Rust, Python, WebAssembly, QEMU, Stream Processing

React Native Developer - Freelance Since 01.2019
Stiftung Berufliche Bildung

- I am the sole developer and maintainer of the *JBH Chat* app, which is available on both iOS and Android stores
- Tech-Stack: Typescript, Swift, Java, React Native, Android, iOS

Research Assistant 07.2021 - 01.2023
Deutsches Forschungszentrum für Künstliche Intelligenz

- Developed a hypervisor that utilizes inter-VM shared memory for stream processing workloads and maximizes throughput
- Tech-Stack: C++, Rust, LLVM/MLIR, Cloud-Hypervisor, rust-vmm, Firecracker, QEMU

Software Engineer 07.2020 - 07.2021
German-Turkish Advanced Research Centre

- Worked mostly as a Rust and Go developer, maintaining microservice architectures for various projects
- Tech-Stack: Go, Rust, Kotlin, Kubernetes, Docker

Research Assistant 06.2018 - 06.2020
Distributed Artificial Intelligence Laboratory

- Contributed to multiple security research projects such as Intrusion Detection Systems and static and dynamic code analyzers
- Tech-Stack: Java, Android, Kubernetes, Docker, Intrusion Detection Systems

Community service 10.2010 - 06.2011
Caritas Sozialstation Hamburg

PROJECTS

Wasmtime & Cranelift Since 10.2023
Open-Source Project

- Working on improving the documentation for Wasmtime, a fast and secure runtime for WebAssembly
- Contributing to Wasmtime's Cranelift, a compiler that converts a target-independent intermediate representation into executable machine code
- I am currently interested in targeting and learning RISC-V

NebulaStream Since 07.2021
Research Project

- NebulaStream is a general purpose, end-to-end data management system for the IoT
- My focus is the secure and efficient execution of user-defined functions and polyglot queries, mainly for Rust and Python
- Main author of a WebAssembly query compiler for secure query execution and co-developed the query compiler framework *Nautilus* and a specialized IR

Decentralized Node Distribution in Fog Networks 10.2020 - 09.2021
Research Project

- We designed and implemented a framework, that moves resource-restricted nodes between Kubernetes clusters to ensure optimal resource allocation
- My focus was the Kubernetes scheduler, which is responsible for gathering statistics and moving nodes between clusters

Cosy 07.2020 - 07.2021
Research Project

- *Cosy* is a novel project to apply AI methods for predicting cyber threats and calculating responses to reduce potential risks and damages
- My responsibility was to develop the microservice architecture and testbed

Panderam 05.2020 - 08.2021
Research Project

- The goal of Panderam was to develop a platform for easily assessing the privacy and data security of Android apps
- Co-developed the static code analyzer and malware detector

Radar 06.2018 - 06.2020
Closed-Source Research Project

- Radar was a novel intrusion detection system that combined various state-of-the-art security techniques
- Co-developed a CVE parser for automatic detection of information-security vulnerabilities and exposures
- Developed a components for computing the network reachability

AppPETs 10.2017 - 04.2019
Research Project

- This project focused on the development of a privacy enhancing library (P-Lib) which offers a set of different security solutions that require minimal security knowledge
- My responsibility was developing the main library P-Lib, which is available on GitHub

SKILLS

Languages	German (first language) Polish (first language) Englisch (fluent, C1) Spanisch (basic, B1)
Programming languages	C/C++, Rust, Python, Java
Tech-Stack	Git, WebAssembly, React Native, Google Cloud, QEMU LLVM/MLIR, cloud-hypervisor, firecracker, LaTeX