



# Victor Bieszka

*Curriculum Vitae*

## PERSONAL

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<i>Birthday</i>	06.12.1991
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<i>GitHub</i>	BieVic
<i>Website</i>	loop-unroller.eu

## EDUCATION

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**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

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**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

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## 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

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### *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, L<sup>A</sup>T<sub>E</sub>X