

# Robert Clausecker

*curriculum vitæ*

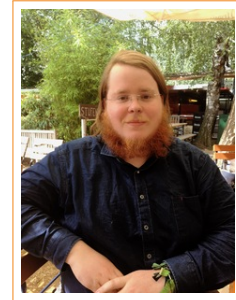
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## Employment

- 2023–2026 **stipend**, *NHR-Verein e. V.*, hosted by Zuse Institute Berlin (ZIB)  
Pursuing a doctoral degree (Dr. rer. nat.) in scientific computing under Prof. Dr. Ch. Schütte. Title: Combinatorial SIMD Programming.
- 2020–2023 **research assistant**, *Zuse Institute Berlin (ZIB)*  
Heuristic search, member of the scalable algorithms workgroup under Dr. F. Schintke
- 2017–2020 **student assistant**, *Zuse Institute Berlin (ZIB)*  
Heuristic search, student member of the scalable algorithms workgroup under Prof. Dr. A. Reinefeld and Dr. F. Schintke
- 2013–2017 **student assistant**, *Fraunhofer Institute FOKUS*, Berlin  
Formal verification, assistant to Dr.-Ing. J. Gerlach
- summer 2013 **intern**, *Fraunhofer Institute FOKUS*, Berlin  
Work on Solaris distribution “Schillix” under Dipl.-Inf. J. Schilling
- summer 2012 **intern**, *Meteo-Service Weather Research GmbH*, Berlin  
Evaluation of GPU accelerators for numerical weather prediction
- summer 2011 **intern**, *Zuse Institute Berlin (ZIB)*

## Freelance Work

- 2023 **research project**, *The FreeBSD Foundation*  
Development of SIMD-enhanced libc string functions
- summer 2022 **research fellow**, *Université du Québec (TÉLUQ)*, Montréal
- fall 2023 Combinatorial SIMD programming, research under Prof. D. Lemire

## Teaching

- summer 2024 **lecture**, *Parallel systems*, Hochschule für Technik und Wirtschaft Berlin, Lehrbeauftragter
- spring 2024 **block seminar**, *Object oriented programming: introduction to C programming*, Free University of Berlin, Lehrbeauftragter

- spring 2018 **block seminar**, *ProInformatik VII: introduction to C programming*,  
summer 2018 Free University of Berlin, TA to Prof. Dr. M. Esponda-Argüero  
spring 2019  
spring 2019 **seminar**, *pattern databases for heuristic search methods*,  
Humboldt University of Berlin, TA to Prof. Dr. A. Reinefeld

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## Languages

- native **German**  
**English**, *Herder Gymnasium*, Berlin  
**Chinese**, *Herder Gymnasium*, Berlin

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## Education

- 2023– **doctoral studies**, *Free University*, Berlin, scientific computing  
Completion expected for 2026. Research at Zuse Institute Berlin.
- 2020 **Master of Science**, *Humboldt University*, Berlin, informatics
- 2017 **Bachelor of Science**, *Humboldt University*, Berlin, informatics
- 2013 **Abitur**, *Herder Gymnasium*, Berlin
- 2011 **Student Exchange**, *Dayuan International Senior Highschool*,  
Taoyuan, Taiwan, 6 months
- 2011 **Mittlerer Schulabschluss**, *Herder Gymnasium*, Berlin

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## Experience

- artificial intelligence specialist (heuristic search, planning)
- pattern database and endgame tablebase programming
- high performance programming and SIMD optimization
- parallel and distributed computing
- algorithms engineering
- compiler and interpreter programming
- UNIX systems programming (with focus on portability)
- formal verification
- software standardisation
- relational databases
- expert assembly programmer (x86, ARM, ARM64, ...)
- expert C programmer (K&R C, ANSI C, C99, C11, C23)
- Forth, Go, Haskell, J, POSIX shell, bash, ...
- High quality typesetting with  $\text{T}_{\text{E}}\text{X}$  and  $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$
- FreeBSD systems administration

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## Awards

- 2021 SoCS 2021 — Best Paper Award (with Dr. F. Schintke)
- 2021 SAT Competition 2021 — Special Innovation Prize (with B. Kaiser)

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## Selected Publications

- 2023 Transcoding Unicode Characters with AVX-512 Instructions, Software: Practice and Experience, Wiley, 2023
- 2023 Prioritised Unit Propagation by Partitioning the Watch Lists, Pragmatics of SAT 2023
- 2021 A Measure of Quality for IDA\* Heuristics, SoCS 2021 Proceedings, p. 55–63 (best paper award)
- 2020 The Quality of Heuristic Functions for IDA\*, ZIB Report 20-17
- 2019 Zero-Aware Pattern Databases with 1-Bit Compression for Sliding Tile Puzzles, SoCS 2019 Proceedings, p. 35–43
- 2017 Notes on the Construction of Pattern Databases, ZIB Report 17-59

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## Selected Projects

- various Go bindings for the NFC stack  
<https://github.com/clausecker/{nfc,freefare,openkey}>
- dobutsu – tablebase and engine for Dōbutsu Shōgi  
<https://github.com/clausecker/dobutsu>
- 24puzzle – 24 puzzle solver  
<https://github.com/clausecker/24puzzle>
- 8bc – B compiler for the PDP-8  
<https://github.com/clausecker/8bc>
- Palanqin – ARM Cortex M0 emulator for DOS  
<https://github.com/clausecker/palanqin>
- pospop – SIMD-optimized positional population count routines  
<https://github.com/clausecker/pospop>
- Mecrisp Stellaris – Forth system, contributed a FreeBSD port  
<http://mecrisp.sourceforge.net/>
- schilytools – Jörg Schilling’s libraries and utilities (maintainer)  
<https://codeberg.org/schilytools/schilytools>
- simdutf – SIMD-accelerated UTF routines  
<https://github.com/simdutf/simdutf> (contributed AVX-512)

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## Personal Interests

- FreeBSD ports committer and project member
- chairman of the Berlin Linux User Group (<https://belug.de>)

- avid Stack Overflow contributor  
<https://stackoverflow.com/users/417501>
- vintage computing enthusiast and founding member of  
Vintage Computing Festival Berlin e. V. (<https://vcfb.de>)
- size coding and competitive programming
- software development for vintage computers
- calligraphy (Latin, Chinese)