SEBASTIAN WOLFF

60 Fifth Avenue, New York, USA ◇ contact@wolff.onl ◇ wolff09.github.io

I am a verification and formal methods enthusiast who works on challenging problems in concurrent and distributed programming that are relevant in practice. I am looking for opportunities to make real-world software systems more reliable and safe.

EXPERIENCE

Courant Institute of New York University *July 2021 – June 2024*
Postdoctoral Researcher, Mentors: Prof. Thomas Wies, Prof. Dennis Shasha *New York, USA*

- Formalize novel verification techniques for fine-grained concurrent data structures, with a focus on proof automation.
- Verify practical implementations that are beyond the state of the art, like concurrent binary search trees.
- Find and fix real bugs in published implementations.
- Develop an approach to prove memory safety and the absence of memory leaks.
- Integrate the developed theory into (semi-)automatic provers with a low proof burden (code to proof ratio: less than 1:2).
- Publish in top-tier conferences: *CAV'23*, *PLDI'23*, *TACAS'23*, *OOPSLA'22*.

TU Braunschweig & TU Kaiserslautern *October 2015 – June 2021*
Graduate Researcher & Teaching Assistant, Advisor: Prof. Roland Meyer *Braunschweig, Germany*

- Developed the first scalable verification technique for lock-free programs that use manual memory management.
- First work to verify practical lock-free data structures that use Hazard Pointers and Epoch-based Reclamation.
- Implemented tools to automated the entire verification process.
- Published in top-tier conferences: *POPL'20*, *POPL'19*, *SAS'17*, *VMCAI'16*.
- Independently taught an advanced course on static program analysis; thesis advisor for B.Sc./M.Sc. students.
- Collaborated in an industry project to explain and classify faults of embedded software using incomplete specifications.

High-Performance Computing Group, Fraunhofer ITWM *November 2015 – March 2017*
Graduate Researcher, Mentor: Dr. Mirko Rahn *Kaiserslautern, Germany*

- Performed code audits to validate a PGAS implementation, which maps remote memory accesses to local ones in order to employ ThreadSanitizer for debugging, against its (informal) specification.

AWARDS

- **Junior Fellowship of the Simons Foundation** (fully funded postdoctoral research for three years)
- **ETAPS 2022 Doctoral Dissertation Award** (for best Ph.D. thesis)

EDUCATION

TU Braunschweig, Braunschweig, Germany *March 2017 – June 2021*
TU Kaiserslautern, Kaiserslautern, Germany *October 2015 – March 2017*
Ph.D. in Computer Science Grade: summa cum laude
Thesis: *"Verifying Non-blocking Data Structures with Manual Memory Management"*

TU Kaiserslautern, Kaiserslautern, Germany *April 2013 – October 2015*
M.Sc. in Computer Science, minor in Math Grade: 1.0 (ECTS-Grade: A)

TU Kaiserslautern, Kaiserslautern, Germany *October 2009 – March 2013*
B.Sc. in Computer Science, minor in Math Grade: 1.7 (ECTS-Grade: B)

SKILLS

- Programming Languages: C++, Rust, Python, C#, Java
- Familiarity with: SAT/SMT solvers (Z3), BDD libraries (CUDD), parsing (ANTLR, PEST, LALRPOP, LARK)
- Miscellaneous: Latex, Docker, CMake, GDB, Git, SVN, bash, CSS, SASS, HTML