

# Curriculum Vitae

Sebastian Ullrich

sebasti@nullri.ch  
<https://nullri.ch/>

Leopoldstr. 162  
80804 Munich, Germany  
+49 173 313 1235

## Education

- |             |   |
|-------------|---|
| 2017 – 2023 | <b>PhD program in Computer Science, Karlsruhe Institute of Technology (KIT)</b><br>Advisor: G. Snelting<br>Thesis: <i>An Extensible Theorem Proving Frontend</i><br>Graded “with distinction” ( <i>summa cum laude</i> )  |
| 2014 – 2016 | <b>Master’s program in Computer Science, KIT</b><br>Grade point average of 1.1 (“with distinction”)<br>Thesis: <i>Simple Verification of Rust Programs via Functional Purification</i> (graded 1.0)<br>Written during a stay at Carnegie Mellon University, USA under J. Avigad |
| 2010 – 2014 | <b>Bachelor’s program in Computer Science, KIT</b><br>Grade point average of 1.1 (“with distinction”)   |

## Employment & Teaching

- |                   |  |                  |   |                   |   |      |  |      |  |
|-------------------|--|------------------|---|-------------------|---|------|--|------|--|
| 2023 – today      | <b>Cofounder &amp; Head of Engineering</b> at the <i>Lean Focused Research Organization (FRO)</i><br>As Head of Engineering, I co-lead the planning and execution of our technical projects together with my cofounder and Chief Architect, Leonardo de Moura. I directly supervise a group of, at the time of writing, six team members centered around user experience and compiler engineering. I implemented fundamental changes to Lean’s core systems to improve scalability of the whole system, including incremental and parallel elaboration as well as the module system.   |                  |   |                   |   |      |  |      |  |
| 2017 – 2023       | <b>Doctoral researcher</b> at the <i>Programming paradigms group IPD Snelting, KIT</i><br>Teaching: <table><tr><td>2018, 2021, 2022</td><td>Supervisor for <i>Theorem Prover Lab: Applications in Programming Languages</i></td></tr><tr><td>2017, 2020 – 2022</td><td>Teaching assistant for <i>Programming Paradigms</i></td></tr><tr><td>2019</td><td>Lecturer for <i>Semantics of Programming Languages</i></td></tr><tr><td>2017</td><td>Teaching assistant for <i>Semantics of Programming Languages</i></td></tr></table> <p>I supervised six theses by bachelor and masters students on various Lean topics during my PhD.</p> | 2018, 2021, 2022 | Supervisor for <i>Theorem Prover Lab: Applications in Programming Languages</i> | 2017, 2020 – 2022 | Teaching assistant for <i>Programming Paradigms</i> | 2019 | Lecturer for <i>Semantics of Programming Languages</i> | 2017 | Teaching assistant for <i>Semantics of Programming Languages</i> |
| 2018, 2021, 2022  | Supervisor for <i>Theorem Prover Lab: Applications in Programming Languages</i>  |                  |   |                   |   |      |  |      |  |
| 2017, 2020 – 2022 | Teaching assistant for <i>Programming Paradigms</i>  |                  |   |                   |   |      |  |      |  |
| 2019              | Lecturer for <i>Semantics of Programming Languages</i>   |                  |   |                   |   |      |  |      |  |
| 2017              | Teaching assistant for <i>Semantics of Programming Languages</i>   |                  |   |                   |   |      |  |      |  |
| 2018              | 4-months <b>research internship</b> at Microsoft Research Redmond under Leonardo de Moura  |                  |   |                   |   |      |  |      |  |
| 2013              | 5-months <b>internship</b> at Google Zürich, Site Reliability Engineering department   |                  |   |                   |   |      |  |      |  |

## Awards

- 2025 | **ACM SIGPLAN Programming Languages Software Award** for the *Lean Theorem Prover* project together with Gabriel Ebner, Soonho Kong, and Leonardo de Moura

## Academic Service

- 2025 | **Workshop Chair** for the *fourth Workshop on the Implementation of Type Systems*  
2023 | **PC member** for the *second Workshop on the Implementation of Type Systems*

## Talks

See <https://sebasti.a.nullri.ch/talks/>

## Publications

- 2024 | *S. Ullrich*. **Lean: Past, Present, and Future (Invited Talk)**. 9th International Conference on Formal Structures for Computation and Deduction
- 2023 | *S. Ullrich*. **An Extensible Theorem Proving Frontend**. PhD thesis. Karlsruhe Institute of Technology
- 2022 | *S. Ullrich, L. d. Moura*. **‘do’ Unchained: Embracing Local Imperativity in a Purely Functional Language (Functional Pearl)**. 27th ACM SIGPLAN International Conference on Functional Programming  
*S. Ullrich, L. d. Moura*. **Beyond Notations: Hygienic Macro Expansion for Theorem Proving Languages**. Logical Methods in Computer Science
- 2021 | *L. d. Moura, S. Ullrich*. **The Lean 4 Theorem Prover and Programming Language**. 28th International Conference on Automated Deduction
- 2020 | *S. Ullrich, L. d. Moura*. **Beyond Notations: Hygienic Macro Expansion for Theorem Proving Languages**. 10th International Joint Conference on Automated Reasoning
- 2019 | *S. Ullrich, L. d. Moura*. **Counting Immutable Beans: Reference Counting Optimized for Purely Functional Programming**. 31st symposium on Implementation and Application of Functional Languages
- 2017 | *G. Ebner, S. Ullrich, J. Roesch, J. Avigad, L. d. Moura*. **A Metaprogramming Framework for Formal Verification**. 22nd ACM SIGPLAN International Conference on Functional Programming
- 2016 | *S. Buchwald, D. Lohner, S. Ullrich*. **Verified Construction of Static Single Assignment Form**. 25th International Conference on Compiler Construction