

# Tobias LADNER

Curriculum Vitae



## Current Position

since 02/2022

**Ph.D. Candidate**

📍 Technical University of Munich, Germany

Topic: Formal Verification of Neural Networks



## Education

10/2019 –  
12/2021

**Master of Science**

📍 Technical University of Munich, Germany

Computer Science • with high distinction



Winter 2020

**Erasmus Exchange Semester**

📍 University of Sussex, United Kingdom

Computer Science



10/2016 –  
08/2019

**Bachelor of Science**

📍 Technical University of Munich, Germany

Computer Science • with merit



## Publications

- [1] **Automatic Abstraction Refinement in Neural Network Verification using Sensitivity Analysis.** Tobias Ladner and Matthias Althoff. *HSCC*. 2023.
- [2] **Exponent Relaxation of Polynomial Zonotopes and Its Applications in Neural Network Verification.** Tobias Ladner and Matthias Althoff. *AAAI*. 2024.
- [3] **Formal Verification of Graph Neural Networks with Uncertain Node Features and Uncertain Graph Structure.** Tobias Ladner, Michael Eichelbeck, and Matthias Althoff. *arXiv (under review)*. 2024.
- [4] **Fully Automatic Neural Network Reduction for Formal Verification.** Tobias Ladner and Matthias Althoff. *arXiv (under review)*. 2024.
- [5] **End-To-End Set-Based Training for Neural Network Verification.** Lukas Koller, Tobias Ladner, and Matthias Althoff. *arXiv (under review)*. 2024.

## Professional Contributions and Activities

- Administrator of toolbox [CORA](#)
- Repeatability co-chair of [ARCH Competition](#) (2023, 2024)
- Participation in [ARCH-](#) (2022-2024) and [VNN-](#)Competition (2024).
- Invited talk at [Munich Datageeks](#) and at [University of Aalborg](#): “Formal Verification of Neural Networks in Safety-Critical Environments”
- Hobby projects: [Android Reddit Wallpaper](#), [Covid Data Visualization](#)

## Further Work Experiences

Various internships as a software engineer: [INVENOX](#) (2017), [ARZ](#) (2013-2016), and [AKH](#) (2012). Tutor at [Technical University of Munich](#) (2018, 2019). Civil service at [Austrian Red Cross](#) (2015, 2016). Ski instructor during holidays (2010-2020).

### About Me

Tobias Ladner

📍 Munich, Germany

### Specialization

AI Safety,  
Machine Learning,  
Formal Verification,  
Set-Based Computing

### Programming

matlab, python,  
latex, java, c++,  
html, css, js

### Languages

German (native),  
English (C2)

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🌐 [Website](#)

🌐 [LinkedIn](#)

🎓 [Google Scholar](#)

🐙 [GitHub](#)