



Current Position

since 02/2022

Ph.D. Student

📍 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



Selected 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. *TMLR*. 2025.
- [4] **Explaining, Fast and Slow: Abstraction and Refinement of Provable Explanations.** Shahaf Bassan*, Yizhak Yisrael Elboher*, Tobias Ladner*, Matthias Althoff, and Guy Katz. *ICML*. 2025.
- [5] **Fully Automatic Neural Network Reduction for Formal Verification.** Tobias Ladner and Matthias Althoff. *arXiv (under review)*. 2024.
- [6] **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-COMP](#) (2023-2025) and [VNN-COMP](#) (2025)
- 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 (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](#)