

Daniel Herbst

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EDUCATION

Technical University of Munich

PhD in Computer Science

03/2025–

Munich, Germany

Advisor: Stefanie Jegelka.

Technical University of Munich

M.Sc. in Mathematics, Minor in Computer Science (Final GPA: 1.0/1.0, with high distinction)

10/2021–02/2025

Munich, Germany

Master thesis on transferability/expressivity of graph neural networks with graphon theory. [📄](#)

Selected coursework: Stochastic Analysis, Random Matrix Theory, Mathematical Statistics, High-Dimensional Statistics, Graphical Models in Statistics, Machine Learning, TUM Data Innovation Lab [📄](#) [🌐](#).

University of Waterloo

Exchange student in Statistics and Computer Science (Final GPA: 4.0/4.0, 93/100)

09/2022–12/2022

Waterloo, ON, Canada

Coursework: Forecasting, Causal Inference, Computer Vision [🌐](#).

Karlsruhe Institute of Technology

B.Sc. in Mathematics, Minor in Computer Science (Final GPA: 1.0/1.0, with distinction)

10/2018–10/2021

Karlsruhe, Germany

Bachelor thesis: *Measures on Polish Spaces and Wasserstein Distances.* [📄](#)

Selected coursework: Measure Theory, Functional Analysis, Probability Theory, Abstract Algebra, Algorithms, Software Engineering, Theoretical Computer Science.

WORK EXPERIENCE

Boston Consulting Group

Visiting Data Scientist

10/2023–12/2023

Munich, Germany

Sustainability and carbon accounting for a major financial institution, using Python + data stack, SQL.

Technical University of Munich

Research Assistant

05/2023–09/2023

Munich, Germany

Researched eigenvector-based positional encodings for graph transformers, related in-/equivariances, and long range interactions for graph neural networks at the *Data Analytics and Machine Learning Group*, using Python, JAX, PyTorch.

Ultramarin

Data Science Intern

01/2023–04/2023

Berlin, Germany

Devised, implemented, and evaluated novel uncertainty forecast approaches for financial time series using conformal prediction methods and reinforcement learning methods for asset allocation, using Python + data stack, Scikit-Learn.

Fraunhofer IOSB

Research Assistant

12/2020–08/2021

Karlsruhe, Germany

Assisted research in human pose estimation and crowd analysis; developed, implemented, and evaluated crowdedness measures and social group detection methods for pedestrian crowds, using Python + data stack.

Karlsruhe Institute of Technology

Teaching Assistant

10/2019–09/2020

Karlsruhe, Germany

Held tutorials for ~30 participants of the lectures Linear Algebra 1 and 2, graded weekly exercise sheets.

AWARDS AND SCHOLARSHIPS


German Academic Scholarship Foundation

01/2019–12/2024

Scholarship holder

The *German Academic Scholarship Foundation* (German: *Studienstiftung des deutschen Volkes*) is Germany's largest, oldest and most prestigious scholarship foundation; top $\sim 0.5\%$ of university students admitted.


PUBLICATIONS

[1] **Higher-Order Graphon Neural Networks: Approximation and Cut Distance.** 

Daniel Herbst and Stefanie Jegelka.

*International Conference on Learning Representations (ICLR), 2025. **Spotlight.***

Also: NeurReps Workshop at NeurIPS 2024.

[2] **Spatio-Spectral Graph Neural Networks.**  

Simon Geisler*, Arthur Kosmala*, Daniel Herbst, and Stephan Günnemann.

Advances in Neural Information Processing Systems (NeurIPS), 2024.

Also: LCFM Workshop at ICML 2024, LoG Conference 2024.

* Equal contribution.

INVITED TALKS

TUM DAML Group. <i>Transferability of Graph Neural Networks: Beyond Message Passing.</i>	04/2025
1W-MINDS Seminar. <i>Transferability of Graph Neural Networks: Beyond Message Passing.</i>	04/2025
CEQURA Conference 2023. <i>Conformal Prediction of Financial Risk.</i>	09/2023

ACADEMIC SERVICE

Organizing

<i>Learning on Graphs (LoG) Conference</i> , Reviewing chair.	2025
NeurIPS 2024 <i>New in ML Workshop</i> , Co-organizer.	12/2024

Reviewing

NeurIPS Conference.	2025–
ICLR Conference.	2025–
NeurIPS 2024 <i>Workshop on Symmetry and Geometry in Neural Representations.</i>	10/2024
NeurIPS 2024 <i>Workshop on Causality and Large Models.</i>	10/2024

SKILLS

Spoken Languages	German (native), English (C2), Spanish (C1).
Programming Languages	Python, Java, C++, R, Matlab.
Further Technologies	PyTorch, JAX, SQL, L ^A T _E X, Git.

MISCELLANEOUS

German Academic Scholarship Foundation

06/2019–07/2023

Ambassador, Head of Ambassadors

Karlsruhe and Munich, Germany

Organized information events, scholarship fairs and school visits; managed a team of ~ 20 ambassadors in Karlsruhe, developed a nation-wide strategy for online information events and school visits during the pandemic.