

# Jonathan Geuter

[✉ jonathan.geuter@gmx.de](mailto:jonathan.geuter@gmx.de) | [🏠 j-geuter.github.io](https://github.com/j-geuter) | [🌐 www.github.com/j-geuter](https://www.github.com/j-geuter) | [🌐 linkedin.com/in/jonathan-geuter](https://www.linkedin.com/in/jonathan-geuter) | [📄 Jonathan Geuter](#)

## Personal Profile

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PhD student in Applied Mathematics at Harvard. I work on efficient methods for training, post-training, and inference of language models across both autoregressive LLMs and diffusion LLMs. Passionate about alignment, knowledge distillation, novel architectures, diffusion models, and optimal transport. Kempner Graduate Fellow at the Kempner Institute for the Study of Natural & Artificial Intelligence.

## Education

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### Harvard University

PhD in Applied Mathematics

• Supervised by Prof. David Alvarez-Melis, part of Harvard [ML Foundations](#)

• Working on efficient methods for LLMs and dLLMs (pretraining, fine-tuning, and inference), and optimal transport for ML

• Supported by a [Kempner Graduate Fellowship](#)

Cambridge, US

Sep 2023 - May 2028

### Harvard University

MSc in Computer Science

Cambridge, US

Sep 2023 - May 2025

### MIT

Cross-Registered Student

Cambridge, US

Sep 2023 - May 2025

### Technische Universität Berlin

MSc in Mathematics

Berlin, Germany

Oct 2020 - Oct 2022

### University of California, Berkeley

UC Education Abroad Program

Berkeley, US

Aug 2018 - May 2019

### Technische Universität Berlin

BSc in Mathematics

Berlin, Germany

Oct 2016 - Sep 2020

## Work Experience

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### IMC Trading

Quantitative Research Intern (*incoming*)

Sydney, Australia

Nov 2026 - Jan 2027

### Institute of Foundation Models

AI Research Intern

Sunnyvale, US

May 2026 - Sep 2026

### Harvard University

Teaching Assistant for *Computational Science and Engineering Capstone Project Class*

Cambridge, US

Jan 2025 - May 2025

### Jina AI

Machine Learning Intern

• Trained state-of-the-art open source language embedding models [[HuggingFace link](#)]

Berlin, Germany

May 2023 - Aug 2023

### Zuse Institute Berlin

Research Assistant

• Worked on a Julia package for the Frank-Wolfe algorithm and GNNs in the [Laboratory for Interactive Optimization and Learning](#)

Berlin, Germany

May 2021 - Nov 2022

### Technische Universität Berlin

Teaching Assistant for *Computer-Oriented Mathematics I and II*

Berlin, Germany

Oct 2017 - Aug 2018; Oct 2019 - Mar 2021

### Technische Universität Berlin

Teaching Assistant for *Calculus I* and *Linear Algebra I*

Berlin, Germany

Aug 2020 - Oct 2020

### University of California, Berkeley

Research Intern

Berkeley, US

Oct 2018 - Dec 2018

## Publications

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### Stop Training for the Worst: Progressive Unmasking Accelerates Masked Diffusion Training [[link](#)]

J. Kim\*, J. Geuter\*, D. Alvarez-Melis, S. Kakade, S. Chen. In *Proceedings of the 43rd International Conference on Machine Learning (ICML 2026)*, Seoul, South Korea. Previously: *Multimodal Intelligence Workshop at ICLR 2026*, Rio de Janeiro, Brazil.

### Boomerang Distillation Enables Zero-Shot Model Size Interpolation [[link](#)]

S. Kangaslahti, N. V. Nayak\*, J. Geuter\*, M. Fumero, F. Locatello, D. Alvarez-Melis. In *Proceedings of the International Conference on Learning Representations (ICLR 2026)*, Rio de Janeiro, Brazil. Previously: *3rd Workshop on Unifying Representations in Neural Models at NeurIPS 2025*, San Diego, USA.

### RoBoN: Routed Online Best-of-n for Test-Time Scaling with Multiple LLMs [[link](#)]

J. Geuter, G. Kornhardt. *1st Workshop on Foundations of Reasoning in Language Models at NeurIPS 2025*, San Diego, USA.

### Guided Speculative Inference for Efficient Test-Time Alignment of LLMs [[link](#)]

J. Geuter, Y. Mroueh, D. Alvarez-Melis. In *Proceedings of the International Conference on Learning Representations (ICLR 2026)*, Rio de Janeiro, Brazil. Previously: *3rd Workshop for Efficient Systems for Foundation Models at ICML 2025 (Spotlight)*, Vancouver, Canada.

### Entropy-Driven Pre-Tokenization for Byte-Pair Encoding [[link](#)]

Y. Hu, N. Liang, D. Zhao, J. Geuter, V. Reddy, C. Schmidt, C. Tanner. In *Proceedings of the Tokenization Workshop (TokShop) at ICML 2025*, Vancouver, Canada.

## Universal Neural Optimal Transport [\[link\]](#)

J. Geuter, G. Kornhardt, I. Tomasson, V. Laschos. In *Proceedings of the 42nd International Conference on Machine Learning (ICML 2025)*, Vancouver, Canada.

## DDEQs: Distributional Deep Equilibrium Models through Wasserstein Gradient Flows [\[link\]](#)

J. Geuter, C. Bonet, A. Korba, D. Alvarez-Melis. In *Proceedings of the 28th International Conference on Artificial Intelligence and Statistics (AISTATS 2025)*, Phuket, Thailand.

## Jina Embeddings: A Novel Set of High-Performance Sentence Embedding Models [\[link\]](#)

M. Günther, L. Milliken, J. Geuter, G. Mastrapas, B. Wang, H. Xiao. In *Proceedings of the 3rd Workshop for Natural Language Processing Open Source Software at EMNLP (NLP-OSS 2023)*, pages 8-18, Singapore. Association for Computational Linguistics.

## Projects

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Open-source projects I've contributed to on GitHub have accumulated over 1.6k stars.

### finetuner (1.5k★)

Jina AI

Berlin, Germany

May 2023 - Aug 2023

- Contributed to [finetuner](#), a repository for end-to-end finetuning of embedding models

### FrankWolfe.jl (112★), CINDy

Zuse Institute Berlin

Berlin, Germany

May 2021 - Nov 2022

- Contributed to a [Julia package](#) of the Frank-Wolfe algorithm, and a [Python implementation](#) of the CINDy algorithm

### A Sinkhorn-NN Hybrid Algorithm for Optimal Transport - *Master's Thesis*

Technische Universität Berlin and Weierstrass Institute

Berlin, Germany

May 2022 - Oct 2022

### Nonlinear Korn Inequalities - *Bachelor's Thesis*

Technische Universität Berlin and Humboldt Universität zu Berlin

Berlin, Germany

Jun 2020 - Sep 2020

## Skills

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### Programming

Python (PyTorch, transformers, vLLM, NumPy, TensorFlow, JAX, scikit-learn, pandas, verl, Lightning, multiprocessing, distributed training, etc.), Julia

### Miscellaneous

Bash,  $\LaTeX$ , Git

## Talks

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|------|--|-------------------|
| 2025 | Invited talk at Munich NLP about guided speculative inference                      | virtual           |
| 2025 | Oral presentation at ES-FoMo Workshop at ICML 2025 on guided speculative inference | Vancouver, Canada |

## Achievements

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|------|---|---------------|
| 2026 | <b>Selective Program</b> , G Research Spring into Quant Finance                                       | Sicily, Italy |
| 2025 | <b>Grant</b> , 2025 IMC NeurIPS Travel Scholarship  | US            |
| 2025 | <b>Grant</b> , 2025 QuantCo ICML Travel Scholarship   | US            |
| 2025 | <b>Grant</b> , Hudson River Trading ICML Scholar Award  | US            |
| 2025 | <b>PhD Fellowship</b> , Kempner Institute Graduate Fellowship   | Cambridge, US |
| 2021 | <b>Scholarship</b> , <i>Deutschlandstipendium</i> for two semesters                                   | Germany       |
| 2020 | <b>Scholarship</b> , <i>Deutschlandstipendium</i> for two semesters                                   | Germany       |
| 2018 | <b>Grant</b> , for two semesters of full-time study granted by the University of California, Berkeley | Berkeley, US  |

## Service

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**Reviewer** NeurIPS (2023, 2025), AISTATS (2024), ICML (2025, 2026), ICLR (2025)

## Interests

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**Hobbies** Biking, hiking, running, going to the gym, bouldering, tennis, badminton, kite surfing, writing, chess

**Politics** Engaged in the German Green Party; co-founder of European Horizons Chapter TU Berlin

**Volunteering** Founded a soup kitchen during my time at Berkeley; ran a math club for elementary school students for a few years

**Skiing** I love skiing and am a certified skiing instructor in Germany

## Languages

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**German** Native proficiency

**English** Professional proficiency

TOEFL iBT: 118/120

**French** Basic proficiency

certified level B1, 4 years in high school

**Mandarin** Basic proficiency

5 years in high school

**Spanish** Basic proficiency

two semesters at Berliner Volkshochschulen

**Italian** Basic proficiency

one semester at UC Berkeley