

Franziska Gerken

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Education

Summer School 07/2023	Machine Learning for Neuroscience <i>Champalimaud Centre for the Unknown, Lisbon, Portugal</i> CAJAL Advanced Neuroscience Training Programme and Champalimaud Research
Ph.D. since 08/2020	Dynamic Vision and Learning Group <i>Technical University of Munich, Munich, Germany</i> Representation learning for spatio-temporal data, with specific applications in neuroscience and climate
Research Residence 09/2018-11/2018	Department of Mathematics <i>University of Maryland, College Park, United States of America</i> Research residence for master thesis, Prof. Thomas J. Haines
M.Sc. 10/2016-03/2020	Mathematics (Grade in German Grading System: 1.0) <i>Westfälische Wilhelms-Universität Münster, Münster, Germany</i> Specialization: Algebra, Stochastics, Minor: Computer Science Thesis: "Admissibility of isoclinic z-isocrystals with Hodge-Pink structure"
Exchange Student 09/2015-07/2016	Mathematics <i>Université Pierre et Marie Curie, Paris, France</i>
B.Sc. 09/2012-07/2015	Mathematics (Final GPA: 3.83 / 4.0) <i>Utrecht University, Utrecht, The Netherlands</i> Thesis: "The Ihara zeta-function of a graph"

Professional Experience

Research Internship 05/2024 - present	NVIDIA <i>Florence, Italy (05/2024 - 11/2024)</i> <i>Munich, Germany (01/2025 - present)</i> High-resolution, graph-based deep learning models for global weather simulation, improving outlier forecasting by integrating extreme weather events into the training pipeline.
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	- Engineered predictive models using NASA's ERA5 dataset, managing multi-terabyte pipelines via HDF5 and Xarray for high-performance I/O. - Optimized large-scale training workflows within HPC clusters, using PyTorch DDP for multi-node synchronization, significantly streamlining data processing and model convergence
Teaching Assistant 04/2018-03/2020	Department of Mathematics and Computer Science <i>Westfälische Wilhelms-Universität Münster, Münster, Germany</i> Undergraduate Courses in Mathematics
Internship 07/2016-09/2016	Neue Leben Lebensversicherung AG, <i>Hamburg, Germany</i> Actuarial Internship - Calculation of individual actuarial cases - Extension of pre-existent programming modules in the IT administration system in PL/1
Teaching Assistant 02/2015-04/2015	Department of Mathematics and Computer Science <i>Utrecht University, Utrecht, The Netherlands</i> Probability Theory

Publications

Gerken, F., Darcher, A., Gonçalves, P. J., Rapp, R., Elezi, I., Niediek, J., Kehl, M. S., Reber, T. P., Liebe, S., Macke, J. H., Mormann, F., & Leal-Taixé, L. *Decoding movie content from neuronal population activity in the human medial temporal lobe*. eLife, 2025.

Wang, Y., Xiong, Z., Liu, C., Stewart, A. J., Dujardin, T., Bountos, N. I., Zavras, A., Gerken, F., Papoutsis, I., Leal-Taixé, L., & Zhu, X. X. *Towards a Unified Copernicus Foundation Model for Earth Vision*. Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV), 2025.

Bischoff, S., Darcher, A., Deistler, M., Gao, R., Gerken, F., Gloeckler, M., Haxel, L., Kapoor, J., Lappalainen, J. K., Macke, J. H., Moss, G., Pals, M., Pei, F. C., Rapp, R., Sağtekin, A. E., Schröder, C., Schulz, A., Stefanidi, Z., Toyota, S., Ulmer, L., et al. *A Practical Guide to Sample-based Statistical Distances for Evaluating Generative Models in Science*. Transactions on Machine Learning Research (TMLR), 2024.

Machine Learning & Data Science

Frameworks	PyTorch (incl. DDP), Scikit-Learn, NumPy, Xarray
Data Management	HDF5, Pandas, SQL
Languages	Python (Expert Level)

Software Engineering & Infrastructure

Languages	Java, C/C++
DevOps & Tools	Docker, Git, Linux
HPC & Distribution	SLURM, Multi-Node Training, Parallel I/O
Productivity	Microsoft Office

Language Skills

German	Native	English	Fluent
French	Fluent	Dutch	Fluent
Italian	Intermediate		