Christopher **Bülte**

Machine Learning · Statistics · Data Science

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Objective

Aspiring researcher in theoretical and physics-informed machine learning with strong background in statistics and data science, always eager to learn something new. Special interest in foundations of deep learning, uncertainty quantification and statistics as well as applications in the natural and engineering sciences.

Education

Ludwigs-Maximilians-University Munich (LMU) — *Munich, Germany*

Ph.D. in Computer Science — *Mar. 2024 - PRESENT*

- Ph.D. student at the chair of Mathematical Foundations of Artificial Intelligence
- Associated PhD student, Konrad Zuse School of Excellence in Reliable AI

Karlsruhe Institute of Technology (KIT) — *Karlsruhe, Germany*

M.Sc. in Economathematics — *Apr. 2021 - Feb. 2024*

- Specialization in statistics, machine learning and optimization (with distinction)
- Exchange semester: Big Data and Machine learning at ITMO University, (St. Petersburg, Russia)
- Supplementary studies on Sustainable Development

Karlsruhe Institute of Technology (KIT) — *Karlsruhe, Germany*

B.Sc. in Industrial engineering — *Oct. 2017 - Mar. 2021*

- Thesis: *Nonlinear Kernel Regression: Theoretical Aspects and Robust Extensions*
- Assistant teacher for the lectures Mathematics and Statistics

Professional experience

Chair of statistical methods and econometrics, KIT — *Karlsruhe, Germany*

Research Assistant — *Jun. 2022 - Feb. 2024*

- Developing and analyzing neural-network based methods for large-scale probabilistic weather forecasting
- Implementing different methods for post-processing weather forecasts for uncertainty quantification

anacision GmbH — *Karlsruhe, Germany*

Data Science Intern — *Sep. 2019 - Feb. 2020*

- Forecasting and extreme value identification for large scale time series (Python)
- Developing, testing and implementing algorithms for big data integration (Python, Apache Spark)

Research activities

Publications

Bülte, C., Scholl, P., and Kutyniok, G. *Probabilistic predictions with Fourier neural operators.* NeurIPS 2024 Workshop on Bayesian Decision-making and Uncertainty, [link]

Bülte, C., Leimenstoll, L., and Schienle, M. *Estimation of spatio-temporal extremes via generative neural networks.* preprint, arxiv: 2407.08668

Bülte, C., Horat, N., Quinting, J. and Lerch, S. *Uncertainty quantification for data-driven weather models.* preprint, arxiv: 2403.13458

Bülte, C., Kleinebrahm, M., Yilmaz, Ü. and Gomez-Rómero, J. *Multivariate time series imputation for energy data using neural networks.* Energy and AI, 2023, Vol. 13, doi: 10.1016/j.egyai.2023.100239

Yilmaz, Ü., Kleinebrahm, M., **Bülte, C.** and Gomez-Rómero, J. *Applying transformer to imputation of multivariate energy time series data.* ICML 2021 Workshop on Tackling Climate Change with Machine Learning, [link]

Presentations

Compstat 2024, Gießen (Germany), Contributed talk on *Estimation of spatio-temporal extremes via generative neural networks.*

MathSEE Symposium 2023, Karlsruhe (Germany). *Probabilistic data-driven weather forecasting* (Best poster award).

Skills & Interests

Languages	German (native), English (fluent)
Technology	Python, PyTorch, TensorFlow, R, git, LaTex, Linux
Awards & Scholarships	Scholarship Deutschlandstipendium (2019-2020), MathSEE Best poster award (2023)
Interests	Sustainability, music, deep learning, outdoor activities