

JOHANNES WILHELM

M.Sc. Computer Science, RWTH | Machine Learning · Quantitative Research · Python
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WORK EXPERIENCE

Postera Capital

Quantitative Research Analyst

05/2021 - 12/2021

Duesseldorf, Germany

- Developed ML-based predictive signals for cryptocurrency markets using historical market and on-chain data.
- Built leakage-safe preprocessing and feature-engineering pipelines for financial time-series data.
- Trained LSTM forecasting models and evaluated their signals through systematic backtesting.

Research Center Juelich

Python Developer

12/2023 - 10/2024

Aachen, Germany

- Developed Python infrastructure for parallel execution of large-scale optimization experiments on HPC clusters.
- Implemented Slurm job-array workflows and improved parallel execution of the L2L framework.

EDUCATION

RWTH Aachen University

M.Sc. Computer Science

04/2019 - 03/2026

03/2026

German grade 1.6, where 1.0 is best. CS & Mathematics coursework: 1.4

Thesis - Differential Machine Learning for Option Pricing – Hessian Sketching for Neural Greeks [↗](#), grade 1.0

B.Sc. Computer Science

09/2022

German grade 1.5 - top 10%

SELECTED PROJECTS & RESEARCH

Master's Thesis [↗](#):

- **Problem:** Neural surrogate models for Monte Carlo option pricing using second-order derivative supervision.
- **Numerical Methods:** Developed matrix-free Hessian-sketching methods using HVPs and randomized SVD.
- **Engineering:** Implemented vectorized training pipelines in Python/JAX for derivative-aware supervision.
- **Results:** Improved sample efficiency and prediction accuracy, including more accurate learned sensitivities.

Automated Crypto Trading System

- Independently built an end-to-end ML trading system: data aggregation & preprocessing → feature engineering → modeling → backtesting → live execution.
- Developed multi-timescale LSTM models for directional price prediction and evaluated them using chronological out-of-sample validation with exchange API integration.
- This project led to my role as a Quantitative Research Analyst at Postera Capital.

Publications & Writing

- Journal article in preparation based on master's thesis research in differential machine learning for computational finance.
- Technical blog articles on ML, optimization and time-series modeling: johannes-wilhelm.com [↗](#)

TECHNICAL SKILLS

Programming: Python, C++, C#, Java

ML/Numerics: JAX, PyTorch, NumPy, Pandas, scikit-learn, TensorFlow
algorithmic differentiation, randomized linear algebra, numerical optimization

Quantitative: Time-series modeling, Monte Carlo methods, backtesting, option pricing

Infrastructure: Git, Linux/Unix, Bash, Slurm, HPC, SQL