

Leon Kloker

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EDUCATION

Stanford University	September 2022 – June 2024
<i>M.Sc. in Computational and Mathematical Engineering (current GPA 3.9/4.0)</i>	<i>Stanford, CA</i>
University of Stuttgart	October 2017 – August 2021
<i>B.Sc. in Simulation Technology. GPA 1.3 (inverted 4.0 scale, top of the class)</i>	<i>Stuttgart, Germany</i>

INTERNSHIPS

Scientific ML research intern @ Ansys	June 2023 – September 2023
Developed transformer models in order to time integrate solution snapshots of the 2D incompressible Navier-Stokes equation in the turbulent regime as a benchmark. Also explored the intersection of Fourier Neural Operators and Transformers for Neural Operator Learning. (Tools: PyTorch, PDEs)	
ML research intern @ Sandia National Laboratories	December 2022 – March 2023
Investigated the performance of different model architectures, such as convolutional networks or graph transformers for predicting the probability of a successful trial for of a given single-outcome quantum computation circuit. (Tools: PyTorch Geometric, Quantum Computing)	

PROJECTS

CUDA parallel computing	April 2023 – June 2023
Course project. A feedforward neural network was implemented from scratch in C++. Forward and backward pass were written as GPU kernels using CUDA with custom optimized kernels for several functions such as general matrix-matrix multiplication or softmax. The model was further parallelized by using MPI for data distribution. (Tools: CUDA, MPI, C++, Nvidia Nsights)	
Modeling endogenous liquidity crises	April 2023 – June 2023
Project with Prof. Papanicolaou. Used models such as multivariate Hawkes processes or Q-reactive Hawkes processes to model the emergence of flash crashes. Fitted models to real limit order book data, analytically investigated the stability bounds and ran simulations. (Tools: Stochastics, Python)	
Computer Vision for precision oncology	December 2022 – June 2023
Integrative Imaging and Molecular Diagnostics lab @ Stanford Medicine. Built ML algorithms for automated cell segmentation and classification in digitalized cancer tissue samples to discover biomarkers that can predict response to Immunotherapy. (Tools: PyTorch, Statistics)	

PUBLICATIONS

Solution approaches for evaporation-driven density instabilities in a slab of saturated porous media
with Carina Bringedal. *Physics of Fluids* (Vol.34, Issue 9, 2022)

AWARDS AND FELLOWSHIPS

Scholarship of the German Academic Exchange Service (DAAD)	2022 – 2024
Simulation Technology valedictorian award	2021
Ferry Porsche Abitur Prize	2017
DPG Abitur Prize	2017

ADDITIONAL WORK

One Semester of M.Sc. Simulation Technology at University of Stuttgart	2021 – 2022
Teaching Assistant: Engineering Mechanics 1-4, Machine Learning, Linear Algebra for Computing	2018 – 2023
Tennis and fitness coach at Tennis Club Grötzingen and Bernhausen	2018 – 2022

SKILLS

Language: Fluent in German and English, proficient in French
Technical: Python, C++, CUDA, MATLAB, Julia, Java, Git, Bash Script, Latex

INTERESTS & RECENT CLASSES

Mathematical and probabilistic modeling and problem solving
Using Machine Learning to investigate and solve impactful real-world problems
Recent classes: *Advanced Software Engineering, Parallel Computing, Financial Mathematics, Stochastic Methods, Deep Meta Learning, Machine Learning, applied PDEs, Numerical Linear Algebra, Optimization, Cryptocurrencies*