Leon Kloker

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EDUCATION

Stanford University September 2022 – June 2024
M.Sc. in Computational and Mathematical Engineering (current GPA 3.9/4.0) *Stanford, CA*

University of Stuttgart October 2017 – August 2021
B.Sc. in Simulation Technology. GPA 1.3 (inverted 4.0 scale, top of the class) *Stuttgart, Germany*

INTERNSHIPS

Transformers as time-integrators for PDEs June 2023 – September 2023

Internship @ Ansys. Developed transformers combined with autoencoders to timestep solution snapshots of the 2D Navier-Stokes equation in the turbulent regime. Also explored the intersection of Fourier Neural Operators and Transformers for Neural Operator Learning. *(Tools: PyTorch, Numerics)*

Deep Learning for fidelity estimation of quantum circuits December 2022 – March 2023

Internship @ Sandia National Laboratories. Investigated different model architectures, such as convolutional networks or graph transformers, in order to predict the probability of a successful trial of a given quantum computation circuit. *(Tools: Tensorflow, 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 and Course Assistant: Engineering Mechanics 1-4, Intro to AI, Machine Learning 2018 – 2022
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, LeanLaunchpad, Stochastic Methods, Deep Meta Learning, Machine Learning, applied PDEs, Numerical Linear Algebra, Optimization, Cryptocurrencies*