

# Leon Kloker

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## EDUCATION

<b>Stanford University</b>	September 2022 – June 2024
<i>M.Sc. in Computational and Mathematical Engineering (current GPA 3.9/4.0)</i>	<i>Stanford, CA</i>
<b>University of Stuttgart</b>	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

<b>Scientific ML research intern @ Ansys</b>	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)	
<b>ML research intern @ Sandia National Laboratories</b>	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)	

## RESEARCH PROJECTS

<b>CUDA parallel computing</b>	April 2023 – June 2023
<b>Course project.</b> 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)	
<b>Computer Vision for precision oncology</b>	December 2022 – March 2023
<b>Integrative Imaging and Molecular Diagnostics lab @ Stanford Medicine.</b> 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)	
<b>Convection in saline groundwater</b>	October 2021 – July 2022
<b>Final thesis.</b> A mathematical model describing evaporation of saline water from a porous medium was developed to investigate the flow stability via a linear stability analysis and verify results with a direct numerical simulation as part of a RA position. (Tools: Matlab, PDEs)	

## 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, LeanLaunchpad, Stochastic Methods, Deep Meta Learning, Machine Learning, applied PDEs, Numerical Linear Algebra, Optimization, Cryptocurrencies*