Klemens Flöge

Mobile: +49 151 67202506 | klemens.floege@me.com | github.com/klemens-floege | klemens-floege.github.io

Education

University of Cambridge - MASt in Applied Mathematics (Part III of Mathematical Tripos) 2022–2023
Focus on Statistics and Probability, Awarded 1912 Scholarship & Thatcher Prize, GPA: 71.00/100.00

ETH Zürich - BSc Electrical Engineering and Information Technology 2019–2022
Focus on Quantum Photonics and Control, Top 8% of cohort, GPA: 5.55/6.00

University of Pennsylvania - Exchange Semester at Penn Engineering Spring 2022
Focus on Technology Strategy, Control, and Legged Locomotion; ETH Zürich Scholarship

London School of Economics and Political Science - BSc Management 2018–2019
Focus on Micro & Macroeconomics and Accounting, GPA: First Class Honours

Oakham School - International Baccalaureate, 2015–2017
Higher Levels: German Lang & Lit, History, Mathematics, GPA: 41/45

Experience

Helmholtz AI - ML Researcher Munich, Germany
Researching Probabilistic Machine Learning under the supervision of Dr. Vincent Fortuin Nov 2023 - Oct 2024

BASF SE - Data Science Intern Schwarzheide, Germany
Analysed sensor data for predictive maintenance in chemical adhesives production. Jul 2023 - Sep 2023

ETH Zürich - Teaching Assistant Zürich, Switzerland
Supervised 30+ students in laboratory and theoretical courses on engineering and mathematics. Sep 2020 - Dec 2021

Technical Projects

- **OneProt: Multi-Modal Protein Foundation Model, Helmholtz AI** arXiv:2411.04863
  CLIP-trained cross-modal protein retrieval model with downstream potential and meaningful representations.
- **Uncertainty Quantification for LLMs, Helmholtz AI** arXiv:2405.03425
  Bayesian inference integration for Llama2 LoRA fine-tuning using SWAG, improving calibration and OOD detection.
- **Particle-based Bayesian Inference, Helmholtz AI** arXiv:2411.01887
  Enhanced convergence for SVGD in deep Neural Networks with Hessian-based optimization for image and ICU data.
- **Reactor Overflow Detection with CNNs, BASF**
  Predictive overflow detection in ethylene plants using wavelet transforms & CNNs, providing explainable models.
- **PAC-Bayesian Meta-Learning: Master Thesis, University of Cambridge** (Grade 89.00/100.00)
  Extended proofs of generalization theorems; applied framework with BNN/GP models to test-time distribution shifts.

Skills, Languages, and Extracurriculars

- **Languages:** German (native), English (fluent), French (B1–B2)
- **Programming:** Python, C++, SQL, CUDA, R, COMSOL Multiphysics, Bash, SLURM, AWS, Scaleway, FastAPI
- **Machine Learning:** TensorFlow, PyTorch, Lightning, JAX, Sklearn, Huggingface, LangChain, vLLM, DeepSpeed
- **Extracurriculars:** *Board Member*, Engineering Association ETH (2021); *President*, LSE Bankside House Committee (2018–2019); *Volunteer* in Sports & Education, Think Pacific - Fiji (2018)