

## EDUCATION

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- Technische Universität München** Munich, Germany  
Dr.-Ing. in Probabilistic Artificial Intelligence 2023–2026
- Emphasis on applying priors and uncertainty quantification to modern Deep Learning, with a particular emphasis on large Transformer and Diffusion models, under the supervision of Dr. Vincent Fortuin
- University of Cambridge** Cambridge, United Kingdom  
MASt in Applied Mathematics (Part III of Mathematical Tripos), GPA: 71.00/100.00 2022–2023
- Focus on Statistics, Machine Learning and Probability Theory
- ETH Zürich** Zürich, Switzerland  
BSc Electrical Engineering and Information Technology, GPA: 5.55/6.00 2019–2022
- Engineering Electives: Communication and Detection Theory, Communication Networks, Computational Thinking, Embedded Systems & Microcontroller Lab, Estimation and Machine Learning, Qubits, Electrons and Photons
  - Final grade in the Top 8% of cohort
- University of Pennsylvania** Philadelphia, USA  
Scholarship from ETH Zürich for exchange semester at Penn Engineering, GPA: 4.00/4.00 2022–2022
- Focus on Feedback Control Systems and Robotics. Wharton course: Technological & Innovation Strategy
- London School of Economics and Political Science** London, United Kingdom  
BSc Management, GPA: First Class Honours 2018–2019
- Relevant courses included Finance, Financial Accounting, Micro & Macroeconomics, and Supply Chain Management
- Oakham School** Oakham, United Kingdom  
International Baccalaureate, GPA: 41/45 (German Abitur equivalent: 1,1) 2015–2017

## PROJECTS

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- **Wavelet based Overflow detection using CNNs, BASF**  
*Pioneering predictive solutions for potential overflows in Ethylene plant through the use of Wavelet transforms on Time Series sensor data and Convolutional Neural Networks for predictions. Wide range visualisation methods used in order to turn obtain a white-box model for better interpretability.*
- **Meta-Learning: Master Thesis, University of Cambridge** (Grade 89.00/100.00)  
*In depth study of PAC-Bayesian Meta-Learning framework with probabilistic performance guarantees machines. Theorems for generalisation guarantees of learners were proven and state-of-the-art performance of algorithm was shown using Bayesian NNs and Gaussian Processes programmed in PyTorch, TensorFlow and TensorFlow Probability.*
- **Bachelor Thesis, ETH Zürich** (Grade 5.5/6.0)  
*Using the Finite Element Solver COMSOL Multiphysics for a numerical Analysis of the effect of different hBn shapes inside zero-dimensional Fabry-Pérot micro-cavities on the electric field distribution.*
- **GPU programming for digitizer application, ETH Zürich** (Grade 6.00/6.00)  
*Programming an Nvidia PNY Quadro P2020 GPU using the CUDA API for a real-time signal processing of ultrafast laser-experiment data. Implemented processes included averaging and Fast Fourier Transforms of input signals.*

- **Deep Learning in Brain Computer Interfaces, ETH Zürich**

*Altering an existing EEGNet-based Motor-Imagery Brain-Computer Interface for Low-Power Edge Computing. Adjustment of the depth-wise separable convolution as well as fully connected layers improved performance by 5%.*

## EXPERIENCE

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### Helmholtz AI

Research Scientist

Munich, Germany

November 2023 - today

- The current projects I am involved in include enhancing Bayesian particle-based Inference through Hessian computations, incorporating topological priors into Diffusion Models, building multi-modal protein transformers and uncertainty quantification for low-rank adapted LLMs.

### BASF SE

Data Science Intern

Schwarzheide, Germany

July 2023 - September 2023

- Working in the Digitalisation service unit of BASF's Schwarzheide production site usually in teams of 2-3 people.
- Specific roles include manipulating as well as analysing sensor data to understand and predict certain malfunctions in a chemical adhesives plant. The programming was done in Python using the libraries Pandas and Tensorflow with machine learning models including Autoencoders, CNNs, RNNs and LSTMs.

### ETH Zürich

Teaching Assistant, Departments: D-MATH, D-ITET, D-MAVT

Zürich, Switzerland

September 2020 - December 2021

- Taught courses included Digital Circuits Laboratory, Real Analysis, Engineering Mechanics and Multivariable Calculus
- Specific Task include preparing and teaching examples classes of 30+ people as well as correcting exercises

### DrSmile

Intern in a Start-Up

Berlin, Germany

October, 2017 –December, 2017

- My role involved taking care of inner operations, such as tracking product delivery and customer procedure progress. Major projects included setting up the first Retail location.

## SKILLS AND LANGUAGES

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- **Languages:**

**German:** native, **English:** fluent, **French** B1-B2

- **Programming:**

Python, C/C++, R, SQL, TensorFlow, TensorFlow Probability, Numpy, PyTorch, Pandas, CUDA

- **Simulation:**

COMSOL Multiphysics, MATLAB, SciPy

- **Other:**

AWS Cloud Practitioner Certification, L<sup>A</sup>T<sub>E</sub>X, Ubuntu

## EXTRACURRICULAR ACTIVITIES

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- Board Member of the Academic Mechanical and Electrical Engineering Association 2021  
*Student organisation with 4000+ members. Tasks included organising and managing all social events*
- President LSE Bankside House Committee 2018–2019  
*Position elected by hall residents to manage committee funds totalling £18,000 annually to organise social events*
- Volunteer Sports and Education at Think Pacific 2018  
*Teaching struggling primary school children and coaching Rugby sessions in Kadavu, Fiji.*