SHRIYA BHATIJA

M.Sc. Mathematics Student at TU Munich | Interested in Statistical Machine Learning

Contact

Born on 4th of January 1999

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About me

I am a driven and motivated M.Sc. Mathematics student at TU Munich, specialising in Numerics, Stochastics, and Machine Learning. My studies have strengthened my ability to approach complex problems with analytical depth, while my technical experiences have provided me with valuable domain-specific expertise. I work well in independent as well as collaborative work environments, and enjoy developing creative solutions to challenging tasks. I have recently completed my Master's thesis at the University of Cambridge, where I worked on a topic within Causal Machine Learning.

Availability

Finishing my degree program in February 2025. Available for an internship or full-time corporate role starting in March 2025.

ACADEMICS

M.Sc. Mathematics

Graduate degree at the Technical University of Munich with an exchange semester at KTH in Stockholm and at the University of Cambridge.

10/2021-present — **Technical University of Munich** — Munich, Germany
- Current grade: 1.5 (Distinction)
- Studies are focused on Stochastic Modelling and Numerical Mathematics
- Minor in Computer Science; specifically interested in Machine Learning

04/2024-12/2024 — **The University of Cambridge** — Cambridge, UK
- Final grade: 1.0 (Distinction)
- Master's thesis in the field of Causal Machine Learning
- Supervisors: Prof. Dr. Matthias Althoff and Dr. Thomas Bohné

08/2022-01/2023 — **KTH Royal Institute of Technology** — Stockholm, Sweden
- Final grade: 1.5 (Distinction)
- Completed (project) courses worth 30 ECTS on various data science topics

B.Sc. Mathematics

Undergraduate degree at the University of Bonn, internationally known for its excellence in Mathematics.

10/2017-08/2021 — **University of Bonn** — Bonn, Germany
- Final grade: 2.3 (Good)
- Studies focused on Stochastics, Algebra and Representation Theory
- Minor in Economics; specialised in Microeconomics

Secondary Education

German high school degree with a special focus on musical education.

08/2015-07/2017 — **Stadtgymnasium Cologne Porz** — Cologne, Germany
- Final grade: 1.3 (Distinction)
- Majored in Biology and Mathematics
- Intensive Music's program: weekly piano lessons, ensembles and concerts

TECHNICAL EXPERIENCE

The University of Cambridge — Cambridge, UK

Student researcher opportunity at the Cyber-Human Lab at the University's Department of Engineering.

04/2024-12/2024 — **Research Intern: Causal Machine Learning**
- Developed *Multi-Objective Causal Bayesian Optimisation*, a novel sequential optimisation paradigm for identifying Pareto-optimal interventions in multi-outcome causal models
- Derived a rigorous mathematical framework (novel definitions, propositions and proofs) to build an algorithm that solves the optimisation problem
- Demonstrated that our algorithm establishes optimal solutions, which state-of-the-art methods cannot reach for all experimental setups
- Submitted our findings to ICML 2025, which will also be available on arXiv and GitHub shortly (for recruitment purposes, the paper can be provided upon request)

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Coding expertise

Python - Strong proficiency in machine learning frameworks such as TensorFlow and PyTorch

C/C++ - Elementary (but growing) proficiency

github.com/ShriyaBhatija

Languages

German - Mother tongue

Hindi - Mother tongue

English - Professional proficiency

Spanish - Intermediate proficiency

Personal Interests

Piano - I have been playing the piano since my childhood and I still enjoy it as a creative outlet.

Running - Recently, I have been enjoying running and just completed my first long-distance race.

Travelling - But above all, I love experiencing new cultures and traditions. Currently, I am exploring Munich through a 35mm lens.

Munich, February 12th 2025

Institute of Industrial Science — Tokyo, Japan

Student internship in the field of natural language processing at the Institute of Industrial Science, one of the largest university-attached research centers in Japan.

10/2023-03/2024

Engineering Intern: NLP

- Explored a new language task for indirect language understanding called *Inferring the underlying intent of indirect answers*
- Built a tool to efficiently extract, preprocess and annotate (polar question, indirect answer) pairs from X, formerly Twitter, data repositories
- Designed and implemented language models for our indirect language understanding task using pre-trained models such as BERT

German Aerospace Center (DLR) — Berlin, Germany

Student internship in the field of computer vision at Germany's national center for aeronautics and space research.

02/2023-06/2023

Engineering Intern: Computer Vision

- Explored attention-based neural networks for computer vision tasks (vision transformers such as the pre-trained Segmenter and SegViT) in a maritime context, specifically for semantic segmentation of ships on DLR-MACS data
- Experimented with extensive data fusion, transfer learning and fine-tuning approaches to improve model output and mIoU scores
- Established and implemented a framework of several benchmarks to evaluate the reliability and trustworthiness of these models as compared to traditional convolution-based architectures

REFERENCES

Paul-David Zuercher, MSc, PhD (candidate). *Doctoral student at the Department of Engineering, University of Cambridge.*

Mr. Zuercher supervised my Master's thesis and his active mentorship guided me throughout my research. Contact him here: pdz20@cam.ac.uk

Prof. Dr. Peter Jung. *Researcher at TU Berlin and head of the SensorAI group at the OS-EDP department of the DLR.*

Professor Jung co-supervised me at the DLR and on many occasions his vast expertise inspired new directions for my work. Contact him here: Peter.Jung@dlr.de

More professional and academic references as well as certificates are available upon request.