

Moritz Miller

EDUCATION

ETH Zurich M.Sc. Candidate in Statistics	September 2023 – Present Zurich, ZH, Switzerland
University of Mannheim B.Sc. in Economics	September 2020 – August 2023 Mannheim, BW, Germany
Nanyang Technological University Exchange Student	August 2022 – December 2022 Singapore, Singapore
Harvard University Visiting Undergraduate Student	January 2022 – May 2022 Cambridge, MA, United States

ACADEMIC EXPERIENCE

Max Planck Institute for Intelligent Systems Master's Thesis Student	March 2025 – Present Tübingen, BW, Germany
<ul style="list-style-type: none">Investigated in-context counterfactual reasoning (ICCR) in neural sequence models. Demonstrated noise abduction capabilities by training on exchangeable, non-i.i.d. data. Related ICCR to learning transformation on observed values. Published conference paper at NeurIPS 2025.Assess self-compatibility of TabPFN as a causal discovery algorithm. Train prior-data fitted network and decode parent assignments. Measure consistency of predicted causal structures across subsets of causal variables.Accepted return offer to continue research on <i>Doktorandenstipendium</i> during PhD application process.	
ETH Zurich Master's Student	September 2023 – Present Zurich, ZH, Switzerland

• Classified pneumonia in patients by **analyzing MRI chest scans** with CNNs. Applied Integrated Gradients to post-hoc explain model decisions. Deployed transformer to evaluate medical time-series data. Leveraged representation learning across diverse datasets. Awarded best in-class project.

• Co-authored ACL 2025 Findings paper on impact of **initialization in multi-step math reasoning**. Showed that guiding smaller language models to start reasoning correctly improves performance across multiple datasets (up to +24 points on GSM8K). Proposed QuestCoT, a self-query approach that boosts accuracy on GSM8K, SVAMP, ASDiv, and MultiArith.

• Instructed 80 students weekly in introductory Statistics on topics from binary classification to dimensionality reduction. **Recognized as top-voted TA** to lead exam preparation course. Received return offer.

INDUSTRY EXPERIENCE

ETH Juniors Analyst	July 2024 – October 2024 Zurich, ZH, Switzerland
<ul style="list-style-type: none">Advised negotiation services firm on data-driven strategies to improve firm classification and client understanding. Integrated qualitative feedback with quantitative metrics to enhance classification accuracy.Clustered organisations into distinct categories by evaluating questionnaire and performance-based data. Uncovered behavioural and strategic patterns.	
B&W Deloitte Financial Advisory Intern	January 2023 – February 2023 Vienna, Austria

• Implemented accounting standard IFRS 17 for leading Austrian insurance company. **Forecasted underwriting result** utilising actuarial modelling tool, Branchensimulationsmodell.

• Developed solution to optimize Excel performance obstructions. **Upgraded workstream** to Prophet-based program. Ran simulations for over 90'000 insurance contracts.

EXTRACURRICULAR ACTIVITIES

Zurich Sports Analytics Club Co-Founder and Former President	September 2023 – Present Zurich, ZH, Switzerland
<ul style="list-style-type: none">Founded and led Switzerland's first-ever student-lead Sports Analytics club. Enabling Zurich students to collaborate on projects, participate in guest talks, and build a national Sports Analytics network.Organize biannual CyclingHACK in Zurich and Geneva in partnership with Swiss Cycling and Eviden. Coordinate with representatives of the City of Zurich, the Canton of Zurich, and the Swiss Federal Roads Office. Secured CHF 5'000 funding from the <i>Fonds für Verkehrssicherheit</i> to advance traffic casualty prevention.Regularly host events that welcome 40–60 students. Invited speakers from FIFA, the ZSC Lions, SwissSki, and Swiss Curling.	

SCHOLARSHIPS

Scholar at the *Konrad-Adenauer-Stiftung*. One-year ASSIST scholarship at Indian Springs School in Birmingham, AL, United States.

PUBLICATIONS

Moritz Miller, Bernhard Schölkopf, Siyuan Guo. *In-context counterfactual reasoning: an analysis of in-context emergence*. *Neural Information Processing Systems (NeurIPS)*, 2025.

Kushal Jain, **Moritz Miller**, Niket Tandon, Kumar Shridhar. *First-Step Advantage: Importance of Starting Right in Multi-Step Math Reasoning*. *ACL Findings*, 2025.

SKILLS & INTERESTS

Technical: PYTHON – pytorch, vllm, torchsde, huggingface, transformers, pandas. R – lme4, glmnet, rshiny. MICROSOFT OFFICE.

Language: Fluent German and English. Basic French. Can read and translate Latin.

Interests: Malcolm Gladwell's publications. Piano and horn concertos. The Ezra Klein Show. High-intensity interval training.

Spotlight: Featured as a papal expert on prime-time show *klein gegen GROSS*, winning before an audience of over 5 million viewers.

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