Unai Fischer Abaigar

SUMMARY

Ph.D. Candidate in Statistics, LMU Munich
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LinkedIn, Google Scholar

Algorithmic decision-making at scale, machine learning for high-stakes allocation systems, causal inference, calibration and uncertainty quantification

EDUCATION

University of Munich (LMU), Munich, Germany
Ph.D. in Statistics — October 2022 -

- Advisors: Frauke Kreuter, Christoph Kern
- Affiliated researcher at the Munich Center for Machine Learning

Ruprecht Karl University of Heidelberg, Heidelberg, Germany
M.Sc. in Physics, German Grade: 1.0 (US GPA: 4.00) — March 2022

- Thesis: *Modeling Ordinal Mobile Data with Sequential Variational Autoencoders*
- Dynamical systems, networks, and statistical machine learning for time series

B.Sc. in Physics — February 2020

- Thesis: *Modeling the Evolution of Cooperation through Indirect Reciprocity*

Leibniz Kolleg, University of Tübingen, Tübingen, Germany
One year liberal arts program — July 2016

SELECTED RESEARCH EXPERIENCE

Massachusetts Institute of Technology (MIT), Cambridge, MA, USA
Visiting Researcher (upcoming) — Feb 2026 – Mar 2026

- Hosted by Sendhil Mullainathan and Juan Carlos Perdomo

German Institute for Employment Research, Nürnberg, Germany
Guest Researcher — Sep 2025 -

- Designing algorithmic system for fast-tracking high-risk job seekers to specialized counseling teams
- Collaborating with agency stakeholders to translate research methods into operational tools

Harvard University, Cambridge, MA, USA
Fellow — Sep 2024 - Dec 2024

- Hosted by Cynthia Dwork and Juan Carlos Perdomo
- Applied ML to identify high-risk populations in large-scale administrative data (>60M job seeker records), examining when prediction improves targeting in public resource allocation
- Work resulted in ICML Outstanding Paper Award

Data Science Lab, Hertie School, Berlin, Germany
Research Associate — May 2022 - July 2022

- Hosted by Slava Jankin and Lynn Kaack
- Identified future avenues for applying machine learning methods in government

Central Institute of Mental Health, Mannheim, Germany
Research Assistant at Living Lab AI4U — Mar 2022 - Oct 2022

- Developed generative RNN models to predict emotional trajectories from mobile phone time series data in order to recommend personalized mental health interventions
- Managed technical work, coordinating with public mental health specialists, school psychologists and software developers

Data Lab/AI, sovanta AG, Heidelberg, Germany

Student Trainee May 2019 - May 2020

- Worked on a machine learning application for financial allocation in clinical research of a top pharmaceutical company

Institute of Environmental Physics, Heidelberg University, Heidelberg, Germany

Research Intern Feb 2019 - Apr 2020

- Contributed to Utopia, a modeling framework for complex adaptive systems with a focus on network models and celluar automatons

Honors and Awards

LMU-NYU Research Cooperation Program August 2025

- Funding awarded for the project *Foundations of Statistical Prediction in the Public Sphere*, supporting a research stay at NYU (~€10,000)

ICML 2025 Outstanding Paper Award Jul 2025

- Only six main track papers at this year's conference were chosen for this recognition. *Media Coverage*: NYU Data Science, Podcast Interview

Konrad Zuse School for Excellence in Reliable AI May 2023 -

- Selected for advanced training and funding program with the aim of training AI experts with a dual focus on technical brilliance and AI's implications for society

German Academic Scholarship Foundation (*Studienstiftung*) Oct 2016 - Mar 2020

- Awarded to fewer than 0.5% of German students for exceptional academic abilities and societal contributions; Germany's oldest and most prestigious scholarship program

Selected Publications

Fischer-Abaigar, U., C. Kern, and J. C. Perdomo (2025). "The Value of Prediction in Identifying the Worst-Off". In: *Proceedings of the 42nd International Conference on Machine Learning (ICML)*. **Oral Presentation @ ICML 2025, Highlight Track @ FORC 2025**.

Kern, C., **U. Fischer-Abaigar**, J. Schweisthal, D. Frauen, R. Ghani, S. Feuerriegel, M. van der Schaar, and F. Kreuter (2025). "Algorithms for reliable decision-making need causal reasoning". In: *Nature Computational Science*. ISSN: 2662-8457. DOI: 10.1038/s43588-025-00814-9.

Fischer-Abaigar, U., C. Kern, N. Barda, and F. Kreuter (2024). "Bridging the gap: Towards an expanded toolkit for AI-driven decision-making in the public sector". In: *Government Information Quarterly* 41.4, p. 101976. ISSN: 0740-624X. DOI: https://doi.org/10.1016/j.giq.2024.101976.

Selected Talks

The Value of Prediction in Identifying the Worst-Off, ICML 2025 (Oral), Vancouver July 2025

Universal Adaptability, ITACOSM 2025, Bologna University, US July 2025

The Value of Prediction in Identifying the Worst-Off, FORC 2025, Stanford University, US June 2025

The Value of Prediction in Identifying the Worst-Off, Social Foundations of Computation, Max Planck Institute for Intelligent Systems, Tübingen, Germany May 2025

Algorithmic Decision-Making in the Public Sector, Theory of Computation Graduate Student Seminar, Harvard, Cambridge, MA Oct 2024

Introduction to Automated Decision-Making, Coleridge Initiative, UMD, Virtual Oct 2024

Machine Learning for Reliable Decision-Making, Zuse Industry Workshop on Algorithmic Decision-Making, Virtual Apr 2024

Challenges for ML-Supported Decision-Making, Dept. of Statistics, LMU, Munich, Germany Jan 2024

Teaching Experience

University of Munich (LMU), Munich, Germany

Co-Instructor

Advanced Methods in Social Statistics and Social Data Science, Graduate Course Summer 2024, 2025

Machine Learning meets Causality, Graduate Seminar — Winter 2023

Graduate Assistant
Computational Social Science, Graduate Course — Winter 2022, 2023

Ruprecht Karl University of Heidelberg, Heidelberg, Germany

Graduate Assistant
Machine Learning for Real-World Challenges, Graduate Seminar — Summer 2022
Dynamical Systems Theory in Machine Learning, Graduate Course — Winter 2021

Outreach

Data Science for Social Good Munich — Nov 2022 - July 2024
Project Management

- Co-organizer of a yearly two month paid fellowship program where aspiring data scientist work on real-world machine learning problems for the social good

DataFest Germany 2023 — April 2023
Organizational Team Member

- Co-organized a data analysis hackathon

Network Particle World (*Netzwerk Teilchenwelt*) — March 2017 - July 2018
Fellow Coordinator for Heidelberg

Selected Workshops and Training

3rd MCML Workshop on Causal Machine Learning, Munich, Germany — Aug 2024
AI School for CS and OR Education, College Park, MD — May 2024
Multigroup Fairness and the Validity of Statistical Judgment, Simons Institute, Berkeley — April 2023
Bit from It - Information Geometry and Causality, Weimar, Germany — Sep 2019, Oct 2021
Legal and Technical Aspects of Digital Privacy, Leysin, Switzerland — August 2017