

Leopold Mareis



Contact: leopold.mareis(at)tum.de

Education

- **Doctoral Candidate**, Mathematical Statistics, TU Munich, Germany (since 12/2021)
Uncertainty Quantification in Causal Graphical Modeling
- **Master of Mathematics in Operations Research**, TU Munich, Germany (2018–2021)
Thesis: *Vine copula based quantile regression including discrete components*
- **Semester Abroad**, TU Delft, Netherlands (Winter 2018)
- **Bachelor of Mathematics**, TU Munich, Germany (2015–2018)
Thesis: *Inexact successive quadratic approximation methods*

Employment

- **Scientific Researcher**, Technical University of Munich, DE (since 12/2024)
- **Scientific Researcher**, Fraunhofer Institute for Cognitive Systems IKS, DE (10/2021 - 11/2024)
Department: Reasoned AI Decisions
- **Teaching Assistant**, TU Munich, DE
 - Computational Statistics (Summer 2026)
 - Graphical Models in Statistics (Summer 2025)
 - Seminar: Machine Learning for Sequential Decision Making (Winter 2023)
 - Statistics for Business Administration (Summer 2020)
 - Analysis 1 for Physicists (Winter 2016)
- **Secretary**, TU Munich IAS, DE (Summer 2016)
- **Internships**: MunichRe, Agrilution

Publications

Publications:

- Leopold Mareis, Mathias Drton. *Cost-Aware Optimized Front-Door Experimental Design*. Proceedings of Machine Learning Research (PMLR). 2026.
- Leopold Mareis, Stephan Haug, Mathias Drton. *MaRDI's Zenodo Community for Graphical Modeling and Causal Inference*. 2nd Conference on Research Data Management. 2025
- Jan-Angelus Meyer, Jennifer Pierick, Leopold Mareis, Dorian Röhring, Nathalie Opilo, Georg Garnweitner, Rainer Krull. *Low-gradient magnetic separation in Biotechnology: Parameter identification and model-guided scale up*. Separation and Purification Technology. 2025
- Leopold Mareis. *Optimizing Experimental Design for Causal Effect Estimation with Partial Measurements*. 2nd Pacific Causal Inference Conference proceedings, 2024.
- Narges Ahmidi, Leopold Mareis. *Development and certification of clinical AI software*. 2024

Preprints:

- Alireza Zamanian, Leopold Mareis, Narges Ahmidi. *PARCS: A Simulation Algorithm for Causal Methods*

- Ilse Hagerer, Leopold Mareis, Daniela Schkoda. *Causes and Effectiveness of Gender Equality Instruments in Organizations within Germany*

Talks and Poster Presentations

Talks:

- JuliaCon 2026: *Graphical Modeling with Symbolic Algebra in OSCAR.jl* (08/26)
- IMS Annual Meeting: *Cost-Aware Optimized Front-Door Experimental Design* (07/26)
- Statistical Computing Conference Ulm 2025: *Ontology for R language packages* (07/25)
- bitkom - AI & Data Summit: *Counterfactual decision support for the control of a clinical, multi-organ failure ICU machine* (09/2024)
- Doktorand:innentreffen der Stochastik: *Graph Projections for Causal DAGs* (08/2023)
- KI-Medtech Congress: *Estimating Causal Effects of Stent Operations* (07/2023)
- ETH-UCPH-TUM Workshop: *Nonparametric Causal Effect Estimation of Guideline Interventions* (10/2022)
- Doktorand:innentreffen der Stochastik: *Nonparametric Causal Effect Estimation* (08/2022)

Posters:

- Conference on Causal Learning and Reasoning CleAR 2026: *Cost-Aware Optimized Front-Door Experimental Design* (04/2026)
- 2nd Conference on Research Data Infrastructure: *MaRDI's Zenodo Community for Graphical Modeling and Causal Inference* (09/2025)
- 11th World Congress in Probability and Statistics: *Adaptive Experimental Design for Optimal Causal Effect Estimation* (08/2024)
- Oxford StatML Summer School: *Nonparametric Causal Effect Estimation of Guideline Interventions* (08/2023)
- AI-Bay Conference: *Nonparametric Causal Effect Estimation of Guideline Interventions* (02/2023)

Conferences:

- CLear 2025: Causal Learning and Reasoning (05/2025)

Students

Master's Theses:

- Žiga Gartner: *Reanalyzing the DREAM 5 data using techniques from graphical modeling* (Summer 2026)
- Darya Shtromberg: *Graphical Dependence Modeling in Stock Market Analysis* (Winter 2025)
- Adrien Castella: *Active Learning for ML-training for Autonomous Vehicles* (Summer 2024)
- Qianyun Li: *Graph-Simulation Based Analysis of Causal Inference Methods on Instrumental Variables* (Summer 2023)

University Seminar:

- Ronald Skorbogad: *Estimating Counterfactual Treatment Outcomes Through Adversarially Balanced Representations* (Winter 2023)
- Dogu Tomac: *An Overview of Continuous-Time Models and Their Applications* (Winter 2023)

Working Students:

- Sarah Lumpf (10/21 – 07/23)
- Daniel Sturm (10/21 – 11/22)

Computer and Language Skills

Programming: R (Advanced), Python (Intermediate), Julia, C++ and sagemath (Beginner)
Languages: German (Mother tongue), English (C1), French (B1)

Private

My big passion is classical music and in particular the choir. I am a state-certified choir conductor and was in October 2024 elected as the youth referent in the Bavarian choir association (BSB).