Timo Freiesleben

Curriculum Vitae

Research Interests

Areas of Specialization	Explainable AI, Causality, Philosophy of AI, Ethics of AI
Areas of Competence	Philosophy of Science, Machine Learning, Philosophy of Statistics, Decision Theory, Probability Theory, Logic

Positions

10/2022–Now **Researcher**, *Eberhard Karls Universität Tübingen*,
Research project on "Algorithmic Fairness in Healthcare", This work is part of the project: "Certification and Foundations of Safe Machine Learning Systems in Healthcare" funded by the Carl Zeiss Foundation
Supervised by Dr. Thomas Grote

Education

10/2019–Now **Ph.D. in Systemic Neurosciences**, *Graduate School of Systemic Neurosciences München (LMU)*,
Project on Counterfactual Explanations in XAI Inspired by Human Information Processing
Supervised by Prof. Dr. Stephan Hartmann, Dr. Álvaro Tejero Cantero, Prof. Dr. Paul Taylor, Prof. Dr. Agnieszka Wykowska

10/2018–09/2019 **M.Sc. in Computer Science**, *Ludwig-Maximilians-Universität München (LMU)*,
Taken courses on Deep Learning & AI
Without Graduation

10/2016–09/2018 **M.A. in Logic and Philosophy of Science**, *Munich Center for Mathematical Philosophy (MCMP), Ludwig-Maximilians-Universität München (LMU)*,
Very Good,
Thesis on **Incorporating Intuitions into Decision Making Rationally**
Supervised by Dr. Rush Stewart and Prof. Dr. Dr. Hannes Leitgeb

10/2012–09/2016 **B.Sc. in Mathematics**, *Eberhard Karls Universität Tübingen*,
Very Good,
Thesis on **Ramification and Arithmetic Schemes**
Supervised by Prof. Dr. Jürgen Hausen

08/2015–07/2016 **Erasmus Exchange Year**, *University of Oslo*,
With a focus on Mathematical Logic and Computability Theory

09/2010–07/2012 **Abitur**, *in the Wirtschaftsoberschule at the KS-Künzelsau*, *Very Good*

09/2008–07/2010 **Advanced Technical College Entrance Qualification in Business Informatics**, *GvSS Heilbronn*

Teaching

11/2020–Now **Main Instructor**, *LMU Munich Center for Mathematical Philosophy & Department of Statistics*, München
Tasks: Design of course content (lectures, exercises, etc.), teaching, supervision of student projects and contact partner for student matters.

Explainable Artificial Intelligence, *MCMP & Statistics Department*, Jointly with Gunnar König, Winter Term 21/22

Causality and Machine Learning, *Statistics Department*, Jointly with Gunnar König and Susanne Dandl, Sommer Term 21

Philosophy of Artificial Intelligence, *MCMP*, Jointly with Prof. Stephan Hartmann, Winter Term 20/21

Ethics of Artificial Intelligence, *Statistics Department*, Jointly with Florian Pfisterer, Christoph Molnar, Gunnar König, and Susanne Dandl, Winter Term 20/21

10/2016–11/2020 **Teaching Assistant**, *LMU Munich Department of Mathematics & Munich Center for Mathematical Philosophy*, München
Tasks: Designing and correcting assignments/exams, giving tutorials, programming, contact partner for student matters.

Formal Methods II: Models and Simulations, *MCMP*, Led by Dr. Rush Stewart, Summer Term 20

Central Topics in Philosophy of Science, *LMU*, Led by Dr. Jürgen Landes, Winter Term 19/20

Linear Algebra 1, *Mathematics Department*, Led by Dr. Peter Philip, Winter Term 18/19

Linear Algebra 2, *Mathematics Department*, Led by Prof. Dr. Fabien Morel, Summer Term 18

Linear Algebra 1, *Mathematics Department*, Led by Prof. Dr. Fabien Morel, Winter Term 17/18

Topology and multivariable differential calculus, *Mathematics Department*, Led by Prof. Dr. Franz Merkl, Summer Term 17

Analysis 1, *Mathematics Department*, Led by Prof. Dr. Franz Merkl, Winter Term 16/17

Publications & Preprints

- Molnar, C., König, G., Herbinger, J., Freiesleben, T., Dandl, S., Scholbeck, C., Casalicchio, G., Grosse-Wentrup, M., & Bischl, B. (2022). *General pitfalls of model-agnostic interpretation methods for machine learning models*. In Lecture Notes on Artificial Intelligence 13200 xxAI — Beyond explainable AI, Cham. Springer International Publishing.
- Freiesleben, T. (2021). *The intriguing relation between counterfactual explanations and adversarial*

examples. Minds and Machines, 1-33.

○ König, G., Freiesleben, T., & Grosse-Wentrup, M. (2021). *A causal perspective on meaningful and robust algorithmic recourse*. Accepted at ICML 2021 workshop Algorithmic Recourse.

○ (Under Review in 'Machine Learning') Molnar, C., Freiesleben, T., König, G., Casalicchio, G., Wright, M. N., & Bischl, B. (2021). *Relating the Partial Dependence Plot and Permutation Feature Importance to the Data Generating Process*. arXiv preprint arXiv:2109.01433.

Scholarships & Prizes

10/2019–09/2022	**Graduate School of Systemic Neuroscience Neurophilosophy Stipend**, *Ph.D. research stipend*
25/07/2019	**Mobility Innovation Competition @ Campus**, *3rd prize in Startup competition*, Team: DeepGuardian Deep-learning-software equipped camera board for violence detection that respects data privacy.
07/2018	**Oskar-Karl-Forster-Scholarship**, *book stipend*
06/2012	**School-Prize**, *best Abitur*

Conferences, Workshops, Talks, etc.

27/10/2022- 28/10/2022	**Workshop: Responsible Machine Learning in Healthcare**, *University of Copenhagen*, Poster on "What Does Explainable AI Explain?"
19/10/2022- 22/10/2022	**Workshop: Philosophy of Science Meets Machine Learning**, *University of Tübingen*, Presentation on "Scientific Inference With Interpretable Machine Learning"
30/06/2022- 01/07/2022	**Hannover-MCMP-Wuppertal Network Workshop: Philosophy of Science**, *University of Wuppertal*, Presentation on "Scientific Inference With Interpretable Machine Learning"
21/06/2022- 24/06/2022	**ACM Conference on Fairness, Accountability, and Transparency (FAccT)**
13/06/2022	**Panelist at Science Summit of the Joint Research Centre of the European Commission**, *Topic: Science through the AI lens*
09/06/2022- 10/06/2022	**LMU-Cambridge Strategic Partnership Workshop, Topic: "AI in Science: Foundations and Applications"**, *Presentation on "Scientific Inference With Interpretable Machine Learning"*
09/11/2021- 12/11/2021	**Workshop: Philosophy of Science Meets Machine Learning**, *University of Tübingen*, Presentation on "To Explain and to Predict – Explanatory Machine Learning Models in Science"
24/07/2021	**ICML workshop, Algorithmic Recourse**, *Online Event*, Poster on A Causal Perspective on Meaningful and Robust Algorithmic Recourse
19/05/2021	**MCMP-colloquium talks, Embrace the Complexity: The Paradigm Shift in Science From Statistics to Machine Learning**, *München, Germany (Online Event)*, Jointly with Christoph Molnar
12/04/2021- 14/04/2021	**NIAS-workshop, Explainable Medical AI: Ethics, Epistemology, and Formal Methods**, *Leiden, the Netherlands (Online Event)*

17/07/2020	**ICML workshop, XXAI: Extending Explainable AI Beyond Deep Models and Classifiers**, *Vienna, Austria (Online Event)*, Poster on Pitfalls to Avoid when Interpreting Machine Learning Models
29/06/2020- 03/07/2020	**Summerschool: Regularization Methods for Machine Learning**, *Genova, Italy (Online Event)*, Led by Prof. Lorenzo Rosasco
17/02/2020 - 18/02/2020	**Workshop on Machine Learning: Prediction Without Explanation?**, *Karlsruhe (KIT)*, Talk on Counterfactual Explanations & Adversarial Examples
14/01/2020	**Guest Lecture in CTPS course**, *MCMP*, Topic: The Wisdom of Crowds
27/07/2018 - 28/07/2018	**Workshop on Decision Theory & the Future of Artificial Intelligence**, *München (Jointly organized by the MCMP, the CFI, and the CSER)*
22/06/2017 - 26/05/2017	**Masterclass with Graham Priest on Paraconsistent Logic**, *München (LMU)*

Academic Service and Organization

Reviewing	**Synthese, ICML, ACM FAccT, Minds and Machines**
Workshop Co-Organizer	**LMU-Cambridge Strategic Partnership, Topic: "AI in Science: Foundations and Applications", 9-10 June 2022, Munich**
Reading Group Organizer	**MCMP, Topic: "Philosophy of Machine Learning", jointly with Tom Sterkenburg, summer term 2022, Munich**

Skills

Languages	German (native speaker), English (fluent), Spanish (very good command), Norwegian (good command).
Computer Skills	MATLAB/Octave (++), Python (+), Java (++), NetLogo (+++), JavaScript (++), HTML (++), PHP (+), WebPPL (+), LATEX(+++), SQL (++).

Non-Academic Work

03/2019–09/2019	**Software Developer (working student)**, *Zentrum Digitalisierung.Bayern*, Garching, Project: Working on the national research project MEMAP which contributes to the German energy transition strategy. MEMAP (Multi-Energy Management and Aggregation-Platform) optimally matches the local electricity- and heat demand/production for districts Tasks: My work focused mainly on the software development of the platform in the programming language Java. In particular, I had the following tasks: ○ programming the OPC-UA interfaces for handling live-data ○ developing a Jetty-websocket and a website for online access to the platform (HTML, Javascript,etc.) ○ configuration of server data for providing optimization results

References

Prof. Dr. Stephan Hartmann
Chair and Head of the Munich Center for Mathematical Philosophy
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Research Fellow – Ethics and Philosophy Lab
Cluster of Excellence – Machine Learning for Science
Eberhard Karls Universität Tübingen
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