Timo Freiesleben

Curriculum Vitae

▬▬▬ Personal Information

Nationality	German
Email	timo.freiesleben@campus.lmu.de
Areas of Specialization	Explainable AI, Causality, Philosophy of AI
Areas of Competence	Ethics of AI, Philosophy of Science, Machine Learning, Decision Theory, Probability Theory, Logic, Algebra

▬▬▬ 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*.

Work Experience

Academic

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*, 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.

Non-Academic

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

Publications

T. Freiesleben. The intriguing relation between counterfactual explanations and adversarial examples. *Minds and Machines*, pages 1–33, 2021.

G. König, T. Freiesleben, B. Bischl, G. Casalicchio, and M. Grosse-Wentrup. Decomposition of global feature importance into direct and associative components (dedact). *arXiv preprint arXiv:2106.08086*, 2021a.

G. König, T. Freiesleben, and M. Grosse-Wentrup. A causal perspective on meaningful and robust algorithmic recourse. *Accepted at ICML 2021 workshop Algorithmic Recourse, arXiv preprint arXiv:2107.07853*, 2021b.

C. Molnar, G. König, J. Herbinger, T. Freiesleben, S. Dandl, C. A. Scholbeck, G. Casalicchio, M. Grosse-Wentrup, and B. Bischl. Pitfalls to avoid when interpreting machine learning models. *Accepted at ICML 2020 workshop XXAI: Extending Explainable AI Beyond Deep Models and Classifiers, arXiv preprint arXiv:2007.04131*, 2020.

C. Molnar, T. Freiesleben, G. König, G. Casalicchio, M. N. Wright, and B. Bischl. Relating the partial dependence plot and permutation feature importance to the data generating process. *arXiv preprint arXiv:2109.01433*, 2021.

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.

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.
14/10/2018 - 20/10/2018	**Workshop/Seminar on Ethics of AI**, *Venice (VIU)*, Presentation on Hybrid Approaches For Constructing Moral Agents.
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)*.

Reviewing

Synthese, ICML 2021 (Algorithmic Recourse workshop).

Skills

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

References

Prof. Dr. Stephan Hartmann.
Chair and Head of the Munich Center for Mathematical Philosophy
Department of Philosophy, Philosophy of Science and the Study of Religion
Ludwig-Maximilians-Universität München
Contact no: + 49 (0) 89 / 2180 - 3320
Email: S.Hartmann@lmu.de

Dr. Álvaro Tejero-Cantero.
Group Leader of the ML - Science Colaboratory
Cluster of Excellence – Machine Learning for Science
Eberhard Karls Universität Tübingen
Email: alvaro.tejero @at uni-tuebingen.de

Dr. Rush Stewart.
Assistant Professor
Department of Philosophy, Philosophy of Science and the Study of Religion
Ludwig-Maximilians-Universität München
Email: Rush.Stewart@lrz.uni-muenchen.de