



LUKAS KLEIN

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EDUCATION

- 2022 – Today **Ph.D. in Informatics**
ETH Zürich, Institute for Machine Learning. Supervised by Prof. Buhmann and Prof. Krause. Thesis subject: *“Scientific Discovery through interpretable ML”*.
- 2022 – Today **DKFZ International PhD Program**
Helmholtz International Graduate School for Cancer Research. Includes a 3-year scholarship. Acceptance rate of 2.7% in 2022.
- 2022 **OxML Summer School for Machine Learning in Healthcare**
University of Oxford. In person participation.
- 2019 – 2021 **M.Sc. in Statistics**
University of Geneva. Final grade: Very Good. Master Thesis and Exchange at ETH Zürich. Thesis subject: *“Interpretability of Disentangled Representations by Explanatory Methods”*. Exchange grade: Very Good.
- 2015 – 2018 **B.Sc. in Economics**
University of Mannheim. With minor subject Business Studies. Final grade: Good. Exchange at Norwegian School of Economics. Exchange grade: Very Good.

WORK EXPERIENCE

- 2021 – Today **Ph.D. Candidate**
German Cancer Research Center (DKFZ) & Helmholtz Imaging, Interactive Machine Learning Group. Supervised by Dr. Jäger and Prof. Maier-Hein.
- 2021 **Research Intern**
ETH Zürich, Institute for Machine Learning under Prof. Buhmann.
- 2019 **Associate Consultant**
Camelot-ITLab GmbH.
- 2018 – 2019 **Thesis & Working Student for Data Science Consulting**
Camelot-ITLab GmbH. Subject: *“Pricing and Price Prediction of Glacial Acrylic Acid”*. Final Grade: Very Good.
- 2017 **Intern**
Microsoft Germany GmbH. Co-Author of a D21 Initiative Publication for the working committee Digital Ethics: *“Einsatz von KI in der Wirtschaft”*.
- 2014 – 2015 **Intern**
ACE99 Ltd. and Trainingpoint Pte. Ltd. (Singapore).

VOLUNTARY

- 2022 – Today **Advisory Committee of Oxford ML Summer School**
AI for Global Goals.
- 2022 – Today **Guest Lectures / Seminars**
TU Munich, DESY, HIDA Graduate School, HIDSS4Health Graduate School.
- 2022 – Today **Teaching Assistant**
Advanced Topics in Machine Learning (ETH Zürich).
- 2022 – 2023 **Conference Reviewer**
EuroVis 2022, ICML 2023.
- 2016 – 2017 **Speaker for Public Relations**
AstA (Student Council) at the University of Mannheim.
- 2015 – 2016 **Member of the Student Parliament and Deputy Member of the Information Committee**
University of Mannheim. Representative for Refugee Projects.

SKILLS

Languages:

German	Native
English	Fluent
Chinese (Hanyu Pinyin)	Basic

Programming:

Python	Expert
R	Expert
Julia	Basic
SQL	Advanced
MATLAB/Octave	Basic
CUDA	Basic
LaTeX	Expert
PyTorch	Expert
TensorFlow	Basic
JAX	Advanced

Software & Platforms:

Linux (Ubuntu, CentOS, SUSE Enterprise)	Advanced
Nvidia Jetson IoT Platform	Advanced
Singularity/Apptainer Container	Basic
Microsoft Office (Enterprise E5 Level)	Expert
Microsoft Power BI	Basic
Microsoft Visual Studio Code	Expert
Git (with GitHub & GitLab)	Advanced
Azure (Machine Learning Studio)	Advanced
SAP Analytics Cloud	Advanced
IBM Spectrum LSF / Slurm	Expert
Zoom / Microsoft Teams	Expert

PUBLICATIONS

Published:

- 2023 **Discovering Process Dynamic for Scalable Perovskite Solar Cell Manufacturing with Explainable AI**
Authors: Lukas Klein, Sebastian Ziegler, Felix Laufer, Charlotte Debus, Markus Götz, Klaus Maier-Hein, Ulrich W. Paetzold, Fabian Isensee, Paul Jäger, **Journal:** Advanced Materials (IF: 30) , [Download here](#).
- 2023 **Understanding Solar Cell Manufacturing with Explainable AI**
Authors: Lukas Klein, Sebastian Ziegler, Felix Laufer, Charlotte Debus, Markus Götz, Klaus Maier-Hein, Ulrich W. Paetzold, Fabian Isensee, Paul Jäger, **Venue:** NeurIPS 2023 Workshop on XAI in Action (Oral, Top 4 Paper).
- 2023 **Navigating the Pitfalls of Active Learning Evaluation: A Systematic Framework for Meaningful Performance Assessment**
Authors: Carsten T. Lüth, Till J. Bungert, Lukas Klein, Paul Jäger, **Venue:** NeurIPS 2023, [Download here](#).
- 2023 **A Call to Reflect on Evaluation Practices for Failure Detection in Image Classification**
Authors: Paul F. Jaeger, Carsten T. Lüth, Lukas Klein, Till J. Bungert, **Venue:** ICLR 2023 (Oral), [Download here](#).
- 2022 **From Correlation to Causation: Formalizing Interpretable Machine Learning as a Statistical Process**
Authors: Lukas Klein, Mennatallah El-Assady, Paul Jäger, **Venue:** IJCAI 2022 Workshop on XAI, [Download here](#).
- 2022 **Improving Explainability of Disentangled Representations using Multipath-Attribution Mappings**
Authors: Lukas Klein, João B. S. Carvalho, Mennatallah El-Assady, Paolo Penna, Joachim M. Buhmann, Paul Jäger, **Venue:** MIDL 2022, [Download here](#).

Under Review:

- 2024 **Anonymous Title: Scientific Discovery in Diabetes-type 2 by Multi-Modal Light-and Fluorescence Microscopy Data.**
Authors: Lukas Klein, Sebastian Ziegler, Yanni Morgenroth, Eyke Schoeniger, Michele Solimena, Felicia Gerst, Robert Wagner, Fabian Isensee, Klaus Maier-Hein, Paul F. Jaeger, **Venue:** Under Review.
- 2024 **Anonymous Title: Attribution & Attention Method and Metric Evaluation**
Authors: Lukas Klein, Udo Schlegel, Till Bungert, Carsten Lüth, Mennatallah El-Assady, Paul Jäger, **Venue:** Under Review.
- 2024 **Anonymous Title: Predictive Imaging Biomarker Discovery for Treatment Effect Analysis**
Authors: Shuhan Xiao, Lukas Klein, Paul Jäger, Jens Petersen, Klaus Maier-Hein, **Venue:** Under Review.

