





Contact me  

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[Website](#)

born September, 27, 1993

Languages

German (Native)
English (Proficient)
Italian (Elementary)

Academia

Workshop Organizer

DynXAI at ECML PKDD 2023
TempXAI at ECML PKDD 2024

Reviewer

ICLR'25, NeurIPS'24, ICML'24, AAAI'25,
AISTATS'25, MLJ, ESANN'24

Awards & Certificates

Best Paper Award

XAI'23
ECML'23 (MLJ Journal Spotlight)

Top Reviewer

ICML'24, NeurIPS'24

Certificates

SAS Viya Machine Learning Specialist
SAS Visual Business Analyst
SAS Base Programmer

Programming

Python

e.g. torch, scikit-learn, numpy, scipy,
pandas, matplotlib...

SQL

SAS Base
JavaScript

Personal

Voluntary Trainer | 11/2011 - 08/2016
TuS Lichterfelde e.V.

Fabian Fumagalli (he/him)

Academic Research

SHAP-IQ: Uncovering Interactions for Explainable AI

Computing Feature Interactions with Shapley Interactions

- for vision transformer and language models
- model-agnostic for any deep learning model
- for tabular data and models, e.g. XGBoost and LightGBM

Interactions and Benchmarking across Applications

- e.g. data valuation, LLM prompting, uncertainty quantification

Selected Publications

- shapiq: Shapley Interactions in Machine Learning, **NeurIPS 2024**
- KernelSHAP-IQ: Weighted Least Square Optimization for Shapley Interactions, **ICML 2024**
- Beyond TreeSHAP: Efficient Computation of any-order Shapley Interactions for Tree Ensembles, **AAAI 2024**
- SHAP-IQ: Unified Approximation of any-order Shapley Interactions **NeurIPS 2023**

Incremental XAI: Efficient Explanations in Dynamic Environments

Computing Feature Attributions on Evolving Data Streams

- for models that adapt incrementally on distribution shifts
- applicable for sensor networks, financial models, and IoT

Selected Publications

- Incremental Permutation Feature Importance (iPFI): Towards Online Explanations on Data Streams, **Machine Learning Journal**
- iSAGE: An Incremental Version of SAGE for Online Explanation on Data Streams, **ECML PKDD 2023**
- iPDP: On Partial Dependence Plots in Dynamic Modeling Scenarios, **xAI 2023**

Open Source Projects

shapiq (python)

- SHAP interaction quantification
- Shapley interactions for 11 ML domains



Links

- [GitHub](#)
- [PyPi](#)
- [Docs](#)
- [Blog post](#)

Work Experience

PhD Candidate in Explainable AI | 10/2021 - now

Bielefeld University | AG Machine Learning

SAS & Data Science Consultant | 10/2018 - 10/2021

CBTW (former PTC, mayato)

- international project and client responsibility
- high-performance cloud solutions
- optimization and modeling regulatory processes for banking

Student Data Scientist | 10/2017 - 10/2018

CBTW (former PTC, mayato)

Data Scientist Intern | 01/2017 - 06/2017

Munich Re

- machine learning for health insurance

Teaching Assistant | 10/2014 - 10/2016

Freie Universität Berlin

Education

Mathematics M.Sc. | 10/2015 - 10/2018

Technische Universität Berlin

- stochastics, financial mathematics, mathematical deep learning

Mathematics B.Sc. | 10/2012 - 11/2015

Freie Universität Berlin

Statistics (ERASMUS+) | 08/2016 - 12/2016

Norwegian University of Science and Technology