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* December 16, 1986 in Würzburg

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scholar.google.com/citations?user=wpLQuroAAAAJ



Short Bio

Sebastian Lapuschkin is the Head of the Explainable Artificial Intelligence research group at Fraunhofer Heinrich Hertz Institute (HHI) in Berlin.

He received his Ph.D. degree with distinction from the Berlin Institute of Technology in 2018 for his pioneering contributions to the field of Explainable Artificial Intelligence (XAI) and interpretable machine learning. From 2007 to 2013 he studied computer science (B. Sc. and M. Sc.) at the Berlin Institute of Technology, with a focus on software engineering and machine learning.

Sebastian is the recipient of multiple awards, including the Hugo-Geiger-Prize for outstanding doctoral achievement and the 2020 Pattern Recognition Best Paper Award.

His work is focused on pushing the boundaries of XAI, e.g. for achieving human-understandable explanations, and towards the effective and efficient utilization of interpretable feedback for the improvement of machine learning systems and data.

Since 2024 he is co-organizing The World Conference on eXplainable Artificial Intelligence and serves as a Topic Editor on “Opportunities and Challenges in Explainable Artificial Intelligence” for the MDPI Open Access Journals.

Further research interests include efficient machine learning and data analysis, as well as data and algorithm visualization.

Professional Experience

Technological University Dublin

DUBLIN, IRELAND

External Scholar

2025 -

at the Centre of eXplainable Artificial Intelligence. The Centre is the first of its kind in the Republic of Ireland and it aims to increase further and synergise cross-centres, college and external research collaboration.

Multidisciplinary Digital Publishing Institute (MDPI)

Topic Editor

2024 - 2026

for “Opportunities and Challenges in Explainable Artificial Intelligence”.

Submission pre-screening, review management and decision handling.

XAI4Science

Organizer

2024 - 2025

of the Workshop “XAI4Science: From Understanding Model Behavior to Discovering New Scientific Knowledge (2025)”, co-located with ICLR 2025 at Singapore EXPO, Singapore.

World Conference on eXplainable Artificial Intelligence

Steering Committee Member

2024 -

for the 3rd XAI World Conference (2025) in Istanbul, Turkey.

Conference and Special Track co-organization.

Programme Committee Chair

2023 - 2024

for the 2nd XAI World Conference (2024) in Valetta, Malta.

Conference and Special Track co-organization.

Fraunhofer Heinrich-Hertz-Institute

BERLIN, GERMANY

Ethics Committee Member

2023 -

Founding member of the first ethics committee at Fraunhofer HHI.

Head of Explainable Artificial Intelligence

2021 -

Research Group Leadership and direction of XAI research & applications.

Tenured Researcher

2019 - 2020

PostDoc research position in the Machine Learning Group at Fraunhofer HHI.

Research Associate	2014 - 2018
Founding member of the Machine Learning Group at Fraunhofer HHI.	
Berlin Institute of Technology	BERLIN, GERMANY
Research Associate	2013 - 2014
Supervision by Prof. Dr. Klaus-Robert Müller and Prof. Dr. Alexander Binder.	
Student Research- & Teaching Assistant	2011 - 2013
Research assistant to Prof. Dr. Alexander Binder at the machine learning group at TU Berlin.	
Teaching assistant to Prof. Dr. Klaus-Robert Müller, Prof. Dr. Dr. Franz Király, Dr. Irene Dowding (née Winkler) and Dr. Daniel Bartz.	
Student Teaching Assistant	2009 - 2011
Teaching assistant to Prof. Dr. Marc Alexa, Prof. Dr. Odej Kao and Prof. Dr. Oliver Brock.	

Education

Berlin Institute of Technology	BERLIN, GERMANY
PhD in Machine Learning (<i>summa cum laude</i>)	2018
Date of oral defense: December 19 th , 2018.	
Dean's signature on Doctorate Certificate dated January 23 rd , 2019.	
Thesis: "Opening the machine learning black box with Layer-wise Relevance Propagation"	
Supervision headed by Prof. Dr. Klaus-Robert Müller.	
Master of Science in Computer Science	2013
Focus on machine learning, computer vision and large scale data analysis.	
Bachelor of Science in Computer Science	2010
Focus on algorithms and software development	
Deutschhaus-Gymnasium	WÜRZBURG, GERMANY
Abitur (pre-university secondary education)	2007

Teaching

Teaching of and teaching support for 19 university courses since 2009.

Talks & Lectures

Over 31 invited talks and individual lectures held since 2017.
Excludes teaching activities and internal/confidential events.

Third-Party Funded Research Projects

7 third-party funded research projects acquired and managed since 2018

Honors & Awards

Machine Learning and the Physical Sciences Reproducibility Badge	2024
Stanford Top 2% Scientist Worldwide*	2021 - 2023
Best Short Paper Award	2023
Pattern Recognition Best Paper Award and Pattern Recognition Medal	2020
Hugo-Geiger-Prize (1st place)	2019
Freunde des HHI Nachwuchspreis	2019
ERCIM Cor van Baayen Award (finalist)	2019
Best Paper Award	2016

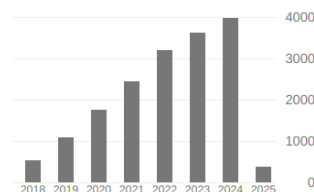
Patents

A Concept Representation of a Machine Learning Model	2024
Relevance Score Assignment dealing with an Attention Module and Applications thereof	2024
Analyzing an Inference of a Machine Learning Predictor	2023
Method and System for Simulating an Optical Image of a Photonic and/or Electronic Device	2022
Pruning and/or Quantizing Machine Learning Predictors	2020
Relevance Score Assignment for Artificial Neural Networks	2016

Publications

Summary of Scientific Impact

	All	Since 2020
# Publications	77	57
# Citations	17554	15410
h-index	33	32
i10-index	50	50



per Google Scholar, retrieved on February 7th, 2025.

Selected Publications

1. Achibat R, Dreyer M, Eisenbraun I, Bosse S, Wiegand T, Samek W and **Lapuschkin S** (2023).
“From attribution maps to human-understandable explanations through Concept Relevance Propagation”.
In: *Nature Machine Intelligence* 5(9):1006–1019.
<https://github.com/rachtibat/zennit-crp> | <https://github.com/maxdreyer/crp-human-study>
A paper introducing the second generation of Explainable Artificial Intelligence with concept-based explanations.
2. Pahde F, Dreyer M, Samek W and **Lapuschkin S** (2023).
“Reveal to Revise: An Explainable AI Life Cycle for Iterative Bias Correction of Deep Models”.
In: *Proceedings of the International Conference on Medical Image Computing and Computer-Assisted Intervention* 596–606. (Green Open Access)
<https://github.com/maxdreyer/reveal2revise>
This paper is dedicated to the incorporation of XAI as a standard component into the life cycle of Artificial Intelligence systems, with the intent to improve performance, reliability, and safety of AI.
3. **Lapuschkin S**, Wäldchen S, Binder A, Montavon G, Samek W and Müller K-R (2019).
“Unmasking Clever Hans Predictors and Assessing what Machines Really Learn”.
In: *Nature Communications* 10:1069.
One of the first papers to rigorously perform model- and data analysis through the lens of XAI, adding a voice of caution to the ongoing excitement about machine intelligence.
4. Montavon G, **Lapuschkin S**, Binder A, Samek W and Müller K-R (2017).
“Explaining NonLinear Classification Decisions with Deep Taylor Decomposition”.
In: *Pattern Recognition* 65:211–222.
A paper discussing the mathematical foundation of LRP and its properties. Pattern Recognition Best Paper Award and Pattern Recognition Medal winner of 2020.
5. **Bach S**, Binder A, Montavon G, Klauschen F, Müller K-R and Samek W (2015).
“On Pixel-wise Explanations for Non-Linear Classifier Decisions by Layer-wise Relevance Propagation”.
In: *PLoS ONE* 10(7):e0130140.
A very influential and early work on local XAI, introducing the widely used Layer-wise Relevance Propagation method. This work has received over 5300 citations as counted by Google Scholar.