

STEFAN KOLEK

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EDUCATION

Ludwig-Maximilians Universität München , Munich, Germany <i>PhD Candidate in Computer Science</i>	since May 2021
Technische Universität Berlin , Berlin, Germany <i>MS in Mathematics</i>	March 2021
Ludwig-Maximilians Universität München , Munich, Germany <i>BS in Mathematics</i>	August 2018

RESEARCH INTERESTS

My research is centered around Interpretable Machine Learning with a strong focus on Computer Vision. A common theme in my PhD research is the reliance on sparsity concepts, such as wavelets and dictionary learning, to make deep learning methods interpretable and explainable.

CONFERENCE PUBLICATIONS

- S. Kolek, R. Windesheim, H. Andrade Loarca, G. Kutyniok, R. Levie. *Explaining Image Classifiers with Multiscale Directional Image Representation*. **CVPR 2023**
- S. Kolek, D. Nguyen, R. Levie, J. Bruna, G. Kutyniok. *Cartoon Explanations of Image Classifiers*. **ECCV 2022 (Oral)**

WORKSHOP PAPERS

- T. Mueller, S. Kolek, F. Jungmann, A. Ziller, D. Usynin, M. Knolle, D. Rueckert, G. Kaissis. *How Do Input Attributes Impact the Privacy Loss in Differential Privacy?* **AAAI 2023**, Workshop on Privacy-Preserving Artificial Intelligence.
- S. Kolek, D. Nguyen, R. Levie, J. Bruna, G. Kutyniok. *A Rate-Distortion Framework for Explaining Black-Box Model Decisions*. **xxAI-Beyond Explainable AI**. International Workshop, Held in Conjunction with **ICML 2020**.

RESEARCH VISITS

Technion , Israel. <i>Invitation by Prof. Ron Levie (1 Week)</i>	March 2023
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INVITED TALKS

Technion , Israel. <i>Applied Math Seminar, Invitation by Prof. Ron Levie.</i>	March 2023
Tel Aviv University , Israel. <i>EE-Computer Vision Seminar, Invitation by Prof. Raja Giryes.</i>	March 2023

SUMMER SCHOOLS

International Computer Vision Summer School , Italy.	July 2023
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TEACHING

Ludwig-Maximilians Universität München , Munich, Germany. Teaching Assistant.	
<i>Modern Mathematics of Deep Learning Seminar (MS Mathematics)</i>	Summer 2023
<i>Mathematical and Statistical Foundations of Machine Learning (MS Mathematics)</i>	Summer 2023
<i>High Dimensional Probability (MS Mathematics)</i>	Fall 2022
<i>Mathematics 2 (BS Mathematics Teacher Track)</i>	Summer 2022
<i>Mathematics 1 (BS Mathematics Teacher Track)</i>	Fall 2021
<i>Analysis 2 (BS Mathematics)</i>	Summer 2021

SCHOLARSHIPS

Ludwig-Maximilians-Universität München PhD Mentoring Scholarship

February 2023

- *Mentorship program for scientists on their way to an academic career.*
- *Annual Travel Grant.*

Associate of the Konrad Zuse School of Excellence in Reliable AI

March 2023

- *Mentorship by transdisciplinary thesis advisory committee.*
- *Annual Travel Grant.*

PREPRINTS

G. Kaissis, A. Ziller, S. Kolek, D. Rückert. *Generalized Likelihood Testing Adversaries Through the Differential Privacy Lens*. 2022 (arXiv:2210.13028)

G. Kaissis, A. Ziller, S. Kolek, D. Usynin, M. Knolle, R. Heckel, R. Braren, J. Schnabel, K. Hammernik, D. Rückert. *Complex-Valued Signal Processing with Differential Privacy and Neural Network Applications*. 2022

TECHNICAL SKILLS

Computer Programming: *Python, PyTorch, Unix, Git*

Languages: *German (native/bilingual), Spanish (fluent/bilingual), English (fluent)*