



Evgenia Rusak

PhD Student, University of Tübingen, Germany

Education

- Since December 2018 **PhD Student** at the groups of Prof. Dr. Matthias Bethge and Prof. Dr. Oliver Bringmann. Research Areas: Generalization capabilities of Deep Neural Networks beyond their training distribution, robustness to distribution shifts, continual learning, representation learning on multi-modal datasets.
- Since June 2018 **Member of doctoral program IMPRS-IS**, the International Max-Planck Research School for Intelligent Systems
- 2012–2015 **M.Sc. in Physics**, *Karlsruhe Institute of Technology*, Final Grade: 1,1.
Final thesis project: Coupling of Quantum Emitters to Nanoantennas. This work has been published in Nature Communications.
- 2009–2012 **B.Sc. in Physics**, *Karlsruhe Institute of Technology*, Final Grade: 1,5.
Final research project: Calculation of Optical Forces acting on Small Particles.
- 2001–2009 **Abitur**, (*High School Diploma*) *Humboldt Gymnasium Karlsruhe*, Final Grade: 1,0.

Professional Experience

- 12/2022–4/2023 **Intern** at FAIR under the supervision of Ari Morcos and Kamalika Chaudhuri.
Research topic: Data curation in large-scale language-vision datasets.
- 2017 - 2018 **Research Assistant** at the Research Centre for Information Technology (FZI).
Research Topic: Machine learning based range estimation of an e-vehicle.

Research Interests

My broad interests lie in understanding and improving the generalization capabilities of Deep Neural Networks beyond their training distribution from a data-centric viewpoint. In particular, I am interested in OOD benchmarking of popular foundation models trained on large-scale datasets. I also find it intriguing to investigate how multi-modality affects the learned representations and their generalizability.

Selected publications

- Deep Learning Mayilvahanan, P., Wiedemer, T., **Rusak, E.**, Brendel, W., Bethge, M., *Does CLIP's generalization performance mainly stem from high train-test similarity?*, ICLR, 2024.

Abbas, A., **Rusak, E.**, Tirumala, K., Brendel, W., Chaudhuri, K., Morcos, A., *Effective pruning of web-scale datasets based on complexity of concept clusters*, ICLR, 2024.

Rusak, E., Schneider, S., Pachitariu, G., Eck, L., Gehler, P., Bringmann, O., Brendel, W., Bethge, M., *If your data distribution shifts, use self-learning*, TMLR, 2022.

Schneider, S., **Rusak, E.**, Eck, L., Bringmann, O., Brendel, W., Bethge, M., *Improving robustness against common corruptions by covariate shift adaptation*, NeurIPS 2020.

Rusak, E., Schott, L., Zimmermann, R., Bitterwolf, J., Bringmann, O., Bethge, M., Brendel, W., *A simple way to make neural networks robust against diverse image corruptions*, Oral presentation at ECCV 2020.

Michaelis, C., Mitzkus, B., Geirhos, R., **Rusak, E.**, Bringmann, O., Ecker, A.S., Bethge, M., Brendel, W., *Benchmarking Robustness in Object Detection: Autonomous Driving when Winter is Coming*, Machine Learning for Autonomous Driving Workshop, NeurIPS 2019.

Physics **Rusak, E.**, Straubel, J., Gładysz, P., Göddel M., Kedzior, A., Kühn, M., Weigend, F., Rockstuhl, C., Slowik, K., *Enhancement of and Interference among Higher Order Multipole Transitions in Molecules near a Plasmonic Nanoantenna*, Nature Communications **10**, 2019.

Guo, R., **Rusak, E.**, Staude I., Dominguez J., Decker M., Rockstuhl C., Brener I., Neshev, D. N., & Kivshar Y. S., *Multipolar Coupling in hybrid metal-dielectric metasurfaces*, ACS Photonics **3**, 2016.

Sautter, J., Staude, I., Decker, M., **Rusak, E.**, Neshev, D. N., Brener, I. & Kivshar, Y. S., *Active Tuning of All-Dielectric Metasurfaces*, ACS nano **9**, 2015.

Rusak, E., Staude, I., Decker, M., Sautter, J., Miroshnichenko, A. E., Powell, D. A., Neshev D.N. & Kivshar, Y. S., *Hybrid nanoantennas for directional emission enhancement*, Applied Physics Letters **105**, 2014.

Please refer to my google scholar profile for all my publications.

Service

Workshop Organizer of the Shift happens Workshop at ICML 2022. The workshop aimed to enhance and consolidate the landscape of robustness evaluation datasets for computer vision and collect new test sets and metrics for quantifying desirable or problematic properties of computer vision models.

Workshop Organizer of the Test-Time Adaptation Workshop at CVPR 2024. The workshop aims to unite researchers on adaptation and robustness to push the boundaries between training and testing by enabling systems to keep updating during deployment.

Reviewing Over the last few years, I have served as a reviewer for NeurIPS, ICML, ICLR, ICCV, ECCV, CVPR and TMLR. Awards: **2023**: Expert Reviewer at TMLR, **2023**: Outstanding Reviewer of CVPR 2023, **2022**: Highlighted Reviewer of ICLR 2022, **2020**: voted to be in the top 10% of high-scoring reviewers for NeurIPS 2020.