

Polina Kirichenko

pol.kirichenko@gmail.com ✉
polkirichenko.github.io 🌐
Google Scholar, Semantic Scholar 🎓

Education

- Ph.D. student in Machine Learning, New York University** New York, USA
Center for Data Science; supervisor: Professor [Andrew Gordon Wilson](#) 2019 – current
Research interests: out-of-distribution generalization, robustness, uncertainty estimation
Expected graduation date: Jan-May 2024
- Ph.D. student in Operations Research, Cornell University** Ithaca, USA
Operations Research and Information Engineering department; transferred to NYU 2018 – 2019
- B.Sc. in Computer Science, Higher School of Economics** Moscow, Russia
Computer Science department; supervisor: Professor [Dmitry Vetrov](#) 2014 – 2018
Cumulative GPA: 9.1 (10.0 scale), class rank: top 3%

Work Experience

- Meta AI, FAIR Labs** New York, USA
Visiting Researcher (FAIR-NYU AI Mentorship program); mentor: [Mark Ibrahim](#) Oct 2022 – current
Research topic: robustness and out-of-distribution generalization
- Meta AI** Menlo Park, USA
Research Intern at AI Integrity team; collaborators: [Hamed Firooz](#), [Randall Balestrieri](#), [David Lopez-Paz](#), [Rama Vedantam](#) June 2022 – Sep 2022
Research topic: class-level biases of data augmentation
- Cold Spring Harbor Laboratory** Cold Spring Harbor, USA
Research Intern; supervisor: Prof. [Anthony Zador](#) June 2021 – Aug 2021
Research topics: meta-learning with compressed neural networks
- DeepMind** (remotely) Mountain View, USA
Research Scientist Intern; supervisors: [Mehrdad Farajtabar](#), [Razvan Pascanu](#), [Balaji Lakshminarayanan](#) June 2020 – Oct 2020
Research topic: continual learning with deep generative models
- École Polytechnique Fédérale de Lausanne (EPFL)** mlo.epfl.ch, Lausanne, Switzerland
Machine Learning and Optimization Lab June 2018 – Aug 2018
Research Intern; supervisors: Prof. [Martin Jaggi](#), Prof. [Dan Alistarh](#)
Research topic: evolution strategies for low precision training of neural networks
- Bayesian Methods Research Group** bayesgroup.ru, Moscow, Russia
Research Assistant; supervisor: Prof. Dmitry Vetrov Sep 2016 – Aug 2018
Research topic: structured sparsification of Bayesian neural networks
- Google** Seattle, USA
Software Engineering Intern, Google Cloud Platform Team July 2017 – Sep 2017
- Google** Munich, Germany
STEP Software Engineering Intern, Piper Team (Google's version control system) July 2016 – Sep 2016

Publications

* Equal Contribution

- Understanding the Detrimental Class-level Effects of Data Augmentation** [\[pdf\]](#)
Polina Kirichenko, Mark Ibrahim, Randall Balestrieri, Diane Bouchacourt, Rama Vedantam,
Hamed Firooz, Andrew Gordon Wilson
ICML Workshop on Spurious Correlations, Invariance, and Stability 2023
Neural Information Processing Systems (NeurIPS) 2023

Last Layer Re-Training is Sufficient for Robustness to Spurious Correlations [\[arXiv, code\]](#)

Polina Kirichenko*, Pavel Izmailov*, Andrew Gordon Wilson

ICML Workshop on Spurious Correlations, Invariance, and Stability 2022; **oral presentation**

International Conference on Learning Representations (ICLR) 2023; spotlight (notable-top-25%)

Does Progress On Object Recognition Benchmarks Improve Real-World Generalization? [\[arxiv\]](#)

Megan Richards, Polina Kirichenko, Diane Bouchacourt, Mark Ibrahim

ICML Data-centric Machine Learning Research Workshop 2023

Under Review

On Feature Learning in the Presence of Spurious Correlations [\[arXiv, code\]](#)

Pavel Izmailov*, Polina Kirichenko*, Nate Gruver*, Andrew Gordon Wilson

First presented at ICML Workshop on Principles of Distribution Shift 2022

Neural Information Processing Systems (NeurIPS) 2022

Chroma-VAE: Mitigating Shortcut Learning with Generative Classifiers [\[arXiv\]](#)

Wanqian Yang, Polina Kirichenko, Micah Goldblum, Andrew Gordon Wilson

Neural Information Processing Systems (NeurIPS) 2022

Does Knowledge Distillation Really Work? [\[arXiv, code\]](#)

Samuel Stanton, Pavel Izmailov, Polina Kirichenko, Alexander A. Alemi, Andrew G. Wilson

Neural Information Processing Systems (NeurIPS) 2021

Task-agnostic Continual Learning with Hybrid Probabilistic Models [\[arXiv, poster\]](#)

Polina Kirichenko, Mehrdad Farajtabar, Dushyant Rao, Balaji Lakshminarayanan, Nir Levine,

Ang Li, Huiyi Hu, Andrew Gordon Wilson, Razvan Pascanu

ICML Workshop on Invertible Neural Networks and Normalizing Flows 2021; **spotlight talk**

Why Normalizing Flows Fail to Detect Out-of-Distribution Data [\[arXiv, code\]](#)

Polina Kirichenko*, Pavel Izmailov*, Andrew G. Wilson

First presented at Workshop on Invertible Neural Networks and Normalizing Flows at ICML 2020

Neural Information Processing Systems (NeurIPS) 2020

Semi-Supervised Learning with Normalizing Flows [\[arXiv, poster, code\]](#)

Pavel Izmailov*, Polina Kirichenko*, Marc Finzi*, Andrew G. Wilson

First presented at Workshop on Invertible Neural Networks and Normalizing Flows at ICML 2019

International Conference on Machine Learning (ICML) 2020

Subspace Inference for Bayesian Deep Learning [\[arXiv, poster, slides, code\]](#)

Pavel Izmailov*, Wesley Maddox*, Polina Kirichenko*, Timur Garipov*, Dmitry Vetrov, Andrew G. Wilson

First presented at Workshop on Uncertainty & Robustness in Deep Learning at ICML 2019; **contributed talk**

Uncertainty in Artificial Intelligence (UAI) 2019

SWALP: Stochastic Weight Averaging in Low Precision Training [\[PMLR, code\]](#)

Guandao Yang, Tianyi Zhang, Polina Kirichenko, Junwen Bai, Andrew G. Wilson, Christopher De Sa

International Conference on Machine Learning (ICML) 2019

Workshop Papers

Effective Surrogate Models for Protein Design with Bayesian Optimization [\[pdf\]](#)

Nate Gruver, Samuel Stanton, Polina Kirichenko, Marc Finzi, Phillip Maffettone, Vivek Myers, Emily Delaney, Peyton Greenside, Andrew Gordon Wilson

ICML Workshop on Computational Biology 2021

Invertible Convolutional Networks [\[pdf, poster\]](#)

Marc Finzi*, Pavel Izmailov*, Wesley Maddox*, Polina Kirichenko*, Andrew G. Wilson

Workshop on Invertible Neural Nets and Normalizing Flows at ICML 2019; **spotlight talk**

Awards

DeepMind Fellowship	2019
New York University Center for Data Science Graduate Fellowship	2019
Golden HSE Award (Alumni Success category)	[link] , 2019
HSE Alumni Academic Fellowship	[link] , 2019
NeurIPS Travel Award	2019
ICML Travel Award	2019
Cornell Operations Research and Information Engineering Graduate Fellowship	2018
Travel Grant for Women in Data Science Conference	[link] , 2018, 2019
Ilya Segalovich Scholarship (Yandex)	[link] , 2016, 2017
Google Anita Borg Memorial Scholarship (Women Techmakers Scholarship)	2015
Google Travel Grant for the Grace Hopper Celebration of Women in Computing	2015

Reviewing

Conferences:	NeurIPS 2019 (top 400 highest-scoring reviewers), ICLR 2020, ICML 2020 (top 33% reviewer), UAI 2020, NeurIPS 2020, AISTATS 2021, AISTATS 2022, NeurIPS 2022, ICML 2023, NeurIPS 2023
Workshops:	NeurIPS 2019 WiML, NeurIPS 2019 BDL, ICML 2020 UDL, NeurIPS 2020 HAMLETS, ICML 2021 INN+ , ICML 2021 UDL, NeurIPS 2021 BDL, NeurIPS 2022 DistShift, ICML SCIS 2023

Talks

“Last Layer Re-Training is Sufficient for Robustness to Spurious Correlations”	
- Spotlight talk at ICLR	[link] , 2023
- Oral Presentation at the ICML Workshop on Spurious Correlations, Invariance, and Stability	[link] , 2022
- Genentech, AI seminar	2022
“Robustness of Deep Learning Models to Distribution Shift”	
- WiML Un-Workshop at ICML	2022
“Why Normalizing Flows Fail to Detect Out-of-Distribution Data”	
- ML Collective, Deep Learning: Classics and Trends (with Robin T. Schirrmeister)	[slides] , 2021
- Facebook AI Research, Uncertainty team	2021
- CogSys Talks, Technical University of Denmark	[video] , 2020
- Capital One, Machine Learning seminar	2020
- NeurIPS 2020	[video] , 2020
- INN+ : Invertible Neural Networks and Normalizing Flows workshop at ICML	[video] , 2020
“Applications of normalizing flows: semi-supervised learning, anomaly detection, and continual learning”	
- Keynote talk at ICML Workshop on Representation Learning for Finance	[video] , 2021
“Does your model know what it doesn't know?”	
- WiML Un-Workshop at ICML	2021
“Task-agnostic Continual Learning with Hybrid Probabilistic Models”	
- ICML INN+ workshop	[video] , 2021
“Continual Learning in Neural Networks”	
- Bayesian Methods Research Group seminar	[video] , 2021
“Anomaly detection via Generative Models”	
- ODS DafaFest 2020, Uncertainty Estimation in ML Workshop	[video] , 2020
“Uncertainty Estimation in Bayesian Deep Learning”	
- WiML Un-Workshop at ICML	2020
“Subspace Inference for Bayesian Deep Learning”	
- University of Paris-Saclay, UQSay seminar	[link] , 2021
- Uncertainty and Robustness in Deep Learning workshop at ICML	[video] , 2019
- Higher School of Economics	[video] , 2019
“How do we build neural networks we can trust?”	
- Broad Institute of MIT and Harvard	[video] , 2019

Technical Skills

Programming languages: Python, C++

Deep learning frameworks: PyTorch, TensorFlow, Keras

Teaching

Cornell University

Ithaca, USA

Teaching Assistant for “Data Science for All” course

Jan 2019 – May 2019

Bayesian Methods for Machine Learning on Coursera

[[course link](#)], Moscow, Russia

Teaching Assistant; helped prepare assignments and quizzes

Sep 2017 – Aug 2018

The specialization of the course received Coursera [Outstanding Educator Award](#)

Higher School of Economics

Moscow, Russia

Teaching Assistant for “Probability Theory and Statistics” (Sep 2016 – June 2017),

“Introduction to Data Analysis” (Jan 2016 – June 2016), “Introduction to Programming” (Sep 2015 – Dec 2015)