




Polina Kirichenko

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Google Scholar, Semantic Scholar 

Education

Ph.D. student in Data Science, New York University

Center for Data Science; supervisor: Professor [Andrew Gordon Wilson](#)

Research interests: uncertainty estimation, probabilistic deep learning, generative models

New York, USA

2019 – current

Ph.D. student in Operations Research, Cornell University

Operations Research and Information Engineering department; transferred to NYU

Ithaca, USA

2018 – 2019

B.Sc. in Computer Science, Higher School of Economics

Computer Science department; supervisor: Professor [Dmitry Vetrov](#)

Cumulative GPA: 9.1 (10.0 scale), class rank: top 3%

Moscow, Russia

2014 – 2018

Work Experience

Google DeepMind

Research Intern; supervisors: [Mehrdad Farajtabar](#), [Balaji Lakshminarayanan](#)

Research topic: continual learning with deep generative models

(remotely) Mountain View, USA

June 2020 – Oct 2020

École Polytechnique Fédérale de Lausanne (EPFL)

Machine Learning and Optimization Lab

Research Intern; supervisors: Prof. [Martin Jaggi](#), Prof. [Dan Alistarh](#)

Research topic: evolution strategies for low precision training of neural networks

mlo.epfl.ch, Lausanne, Switzerland

June 2018 – Aug 2018

Bayesian Methods Research Group

Research Assistant; supervisor: Prof. Dmitry Vetrov

Research topics: structured sparsification of Bayesian neural networks

bayesgroup.ru, Moscow, Russia

Sep 2016 – Aug 2018

Google

Software Engineering Intern, Google Cloud Platform Team

Seattle, USA

July 2017 – Sep 2017

Google

STEP Software Engineering Intern, Piper Team

Munich, Germany

July 2016 – Sep 2016

Publications

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

Invertible Convolutional Networks

[[workshop 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)

* Equal Contribution

Research Projects

Evolution strategies for training low precision neural networks 2018

Polina Kirichenko, Sebastian Stich, Martin Jaggi, Dan Alistarh

Leveraged lower memory consumption of low-precision networks to increase population sizes in evolution strategies which leads to more efficient gradient-free training.

Bayesian regularization of deep neural networks with weight normalization 2018

Polina Kirichenko, Alexander Fritsler, Ekaterina Lobacheva, Dmitry Vetrov

[[report](#)]

Studied the effect of applying noise to direction and magnitude of weight vectors of neurons in deep networks to achieve regularization and structural sparsity.

Vanishing and exploding gradients in recurrent neural networks 2017

Polina Kirichenko, Ekaterina Lobacheva, Dmitry Vetrov

[[report](#)]

Studied constraints on weight matrices of recurrent layers that improve training stability and alleviate vanishing and exploding gradients in RNNs.

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) [[link](#)], 2015

Google Travel Grant for the Grace Hopper Celebration of Women in Computing 2015

Talks

"Anomaly detection via Generative Models", ODS DafaFest 2020, Uncertainty in ML Workshop [[video](#)], 2020

"Normalizing flows for anomaly detection", CogSys Talks, Technical University of Denmark [[video](#)], 2020

"Normalizing flows for anomaly detection", Capital One, Machine Learning seminar 2020

"Why Normalizing Flows Fail to Detect Out-of-Distribution Data", INN+ workshop at ICML [[video](#)], 2020

"Uncertainty Estimation in Bayesian Deep Learning", WiML Un-Workshop at ICML 2020

"Scalable Bayesian Inference in Low-Dimensional Subspaces", Higher School of Economics [[video](#)], 2019

"How do we build neural networks we can trust?", Broad Institute of MIT and Harvard [[video](#)], 2019

"Subspace Inference", Uncertainty & Robustness in Deep Learning workshop at ICML [[video](#)], 2019

Reviewing

Conferences: NeurIPS 2019 (top 400 highest-scoring reviewers), ICLR 2020, ICML 2020 (top 33% reviewer), UAI 2020, NeurIPS 2020, AISTATS 2020

Workshops: NeurIPS 2019 WiML workshop, NeurIPS 2019 BDL workshop, ICML 2020 UDL workshop, NeurIPS 2020 HAMLETS workshop

Technical Skills

Languages: Python, C++

Neural network libraries: PyTorch, TensorFlow, Keras, Theano, Lasagne

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	
National Research University 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)	

Summer Schools

Machine Learning Summer School (London, UK)	2019
Deep Learning & Reinforcement Learning Summer School (Edmonton, Canada)	2019