

Anastasia Makarova

PhD Candidate Learning and Adaptive Systems Lab, ETH Zurich

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EDUCATION

- PhD in Machine Learning, **ETH Zurich** Expected 2021
Selected coursework: Combinatorial optimization, Optimal transport
- MSc in Applied Math, **Skoltech Institute of Science and Technology** double degree program, July 2017
Thesis: Deep Learning for Agricultural Disease Phenotyping, supervisors: prof. [Victor Lempitsky](#) & prof. [Hod Lipson](#)
Selected coursework: Numeric Linear Algebra, Optimization Methods, Machine Learning, Deep Learning, Bayesian Methods, Advanced Machine Learning, Probabilistic Graphical Models, Practical Reinforcement Learning, GPA: 4.8/5
- MSc in Applied Math, **Moscow Institute of Physics and Technology** double degree program (with honors) July 2017
Thesis: Weakly-supervised deep learning for semantic segmentation
Selected coursework: Image Processing and Recognition, Signals and Multidimensional Data Processing, GPA: 5.0/5
- BSc in Applied Math and Physics, **Moscow Institute of Physics and Technology** (with honors), GPA: 4.9/5 June 2015
Thesis: Finding Informative Features of Diseases in the ECG-signal, supervisor: prof. [Konstantin Vorontsov](#)

EMPLOYMENT

- PhD Candidate at **ETH Zurich** (2017 - Now):
I am working on probabilistic deep learning and Bayesian optimization supervised by prof. [Andreas Krause](#)
 - Bayesian optimization over structured domains, such as combinatorial and mixed
 - Multi-fidelity and multi-objective Bayesian optimization and its applications
 - Collaboration with prof. [Konrad Schindler](#): efficient compression and generative models for point clouds
- Research Intern at **Yandex.Weather** (June - August 2016):
Developed RNN and LSTM-based precipitation nowcasting models based on satellite and radar data (Theano, Lasagne, Torch). The methods were launched into [Yandex.Weather](#) production [[details in russian](#)] and used as baselines for [KDD 2019 paper](#).
- Visiting Research Scholar at **Creative Machines Lab, Columbia University in NYC** (September - December 2016):
Developed a weakly-supervised learning plant disease detection model based on aerial photos of maize fields (Keras, Lasagne).

SELECTED PUBLICATIONS

- **Mixed-Variable Bayesian Optimization** [[pdf](#)]
Daxberger Erik, Anastasia Makarova*, Matteo Turchetta*, Andreas Krause*
Under Review: AISTATS 2020
- **Multi-fidelity Batch Bayesian Optimization for the Calibration of Transport System Simulations**
Makarova Anastasia, Matteo Turchetta, Sebastian Hörl, Stefan Beyeler, Andreas Krause
Under Review: Transportation Research Part B 2019
- **Shifted Convolutions for Speeding up Convolutional Neural Networks**
Makarova Anastasia, Vadim Lebedev, Victor Lempitsky
11th Russian Summer School in Information Retrieval 2017

TEACHING

- Supervised theses of MSc students on the topics:
 - *Hierarchical Image Captioning using Entailment Cone Representations*, joint with [Octavian Ganea](#), 2019
 - *Combinatorial and Mixed Bayesian Optimization*, 2019
 - *Bayesian Optimization for Calibration of Transport System Simulations*, 2018
- TA at ETH: • *Probabilistic Artificial Intelligence* (2018-2019), • *Introduction to Machine Learning* (2018-2019),
• *Advanced Topics in Machine Learning* (2017-2018), • *Data Mining: Learning from Large Data Sets* (2017)
- TA at Skoltech: *Image and Signal Processing*, 2017

SKILLS

- Python, PyTorch, Tensorflow, Theano, Lasagne, Lua, Linux, Torch, Mxnet

SUMMER SCHOOLS and HACKATHONS

- Workshop on Structural Inference in High-Dimensional Models 2, 2019
- DeepBayes summer school on Deep Learning and Bayesian Methods, 2017, 2019
- Machine Learning summer school, 2019
- Finalists at LauzHack (top 10%) and winners of SGS challenge, 2017
- Russian Summer school on Information Retrieval, 2017
- Silver medal Kaggle Quora Question Pairs, ranked 79/3300 (top 3%), 2016

AWARDS

- Scholarship for Msc thesis at Columbia University from Skoltech (top 5% Skoltech students), 2016
- Scholarship for excellence in studies at MIPT, 2012 - 2016
- Scholarship of Foundation for Innovative Education (top 5% MIPT students), 2012 - 2014
- Moscow Government scholarship for career guidance at high schools, 2014 - 2015
- Moscow State Government scholarship for achievements in All-Russian Olympiads, 2011