Roman Pogodin, CV

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github: https://github.com/romanpogodin

Education

2017 – 2022
MPhil/PhD Theoretical Neuroscience
University College London, London (UK)
Gatsby Computational Neuroscience Unit

2013 – 2017
BSc Applied Mathematics and Physics (Honours)
Moscow Institute of Physics and Technology (State University), Moscow (Russia)
Department of Control and Applied Mathematics

Research

2023 – present
McGill/Mila, Blake Richards' lab
PostDoc
Topics: TBD

April 2018 – November 2022
Gatsby Unit, UCL, research group of Prof. Latham
PhD student
Topics: associative memory, biologically plausible deep learning, self-supervised learning

November 2018 – February 2019
DeepMind, collaboration with Tor Lattimore
Breadth rotation (part of PhD)
Topic: adaptivity in adversarial bandits

September 2016 – August 2017
Skoltech, research group of Prof. Maximov
Research intern at Center for Energy Systems
Topic: non-convex optimization

July 2016 – August 2016
Summer Research Program, EPFL, Prof. Gerstner's lab
Summer intern in computational neuroscience
Topic: generating long-time sequences with structured neural networks

January 2016 – July 2016
MIPT, under the guidance of Dr. Grudinin
Course project
Topic: optimization in application to structural biology

July 2015 – September 2015
Amgen Scholars Program, LMU Munich, Prof. Leibold's lab
Summer intern in Computational Neuroscience
Topic: models of path planning in a hippocampal-cortical network

Teaching

July 2020
Neuromatch Academy (online school in computational neuroscience)
Teaching assistant

September 2018 – March 2019
Gatsby Unit, UCL
Teaching assistant
Probabilistic and Unsupervised Learning (COMPGI18)
Approximate Inference and Learning in Probabilistic Models (COMPGI16)
Systems and Theoretical Neuroscience

Other

February 2022 – September 2022
SCGB Undergraduate Research Fellowship (SURF Program)
Co-supervisor (with Grace Lindsay) of Andrada-Maria Marica
Work presented at Bernstein 2022 (poster) and Neuromatch Conference 2022 (short talk)

September 2016 – present
MIPT office for international internships
Helping undergraduate students at MIPT with internship applications;
administrating a scientific internships group (>7.5k members) and a chat (>2.5k members)

September 2016 – June 2017	Yandex School of Data Analysis, Moscow (Russia) Master's-level courses in computer science and data analysis
February 2014 – June 2015	MIPT volunteering team Leader of a group working with an orphanage in Moscow

- Paper reviewing: eLife, PLOS Computational Biology, NeurIPS 2021, ICLR 2022, ICML 2022
- Programming: Python (including PyTorch, JAX), C, C++, Matlab
- Other: Linux-based OS, LaTeX, Mathematica
- Languages: English (C1/Advanced), Russian (C2/Native speaker)

Papers

Google Scholar link

March 2022
Locally connected networks as ventral stream models
R. Pogodin, P. E. Latham
1st Brain-Score Workshop (BSW 2022)

June 2021
Towards Biologically Plausible Convolutional Networks
R. Pogodin, Y. Mehta, T. P. Lillicrap, P. E. Latham
In Proceedings of the Advances in Neural Information Processing Systems (NeurIPS) 2021

June 2021
Self-Supervised Learning with Kernel Dependence Maximization
Y. Li*, **R. Pogodin***, D. J. Sutherland, A. Gretton
In Proceedings of the Advances in Neural Information Processing Systems (NeurIPS) 2021
*These authors contributed equally

June 2020
Kernelized information bottleneck leads to biologically plausible 3-factor Hebbian learning in deep networks
R. Pogodin, P. E. Latham
In Proceedings of the Advances in Neural Information Processing Systems (NeurIPS) 2020

December 2019
Working memory facilitates reward-modulated Hebbian learning in recurrent neural networks
R. Pogodin, D. Corneil, A. Seeholzer, J. Heng, W. Gerstner
NeurIPS 2019 workshop
Real Neurons & Hidden Units: future directions at the intersection of neuroscience and AI

July 2019
On First-Order Bounds, Variance and Gap-Dependent Bounds for Adversarial Bandits
R. Pogodin, T. Lattimore
In Proceedings of the Conference on Uncertainty in Artificial Intelligence (UAI) 2019

October 2017
Efficient rank minimization to tighten semidefinite programming for unconstrained binary quadratic optimization
R. Pogodin, M. Krechetov, Y. Maximov
In Proceedings of the 55th Annual Allerton Conference on Communication, Control, and Computing (Allerton)

September 2016
Quadratic Programming Approach to Fit Protein Complexes into Electron Density Maps
R. Pogodin, A. Katrutsa, S. Grudinin
In Proceedings of Information Technologies and Systems 2016

Talks

June 2021
Tricentre meeting (Gatsby Unit, Columbia University and Hebrew University, online)
Title: Towards Biologically Plausible Convolutional Networks

March 2020
Theoretical Neuroscience Journal Club at CNBC CMU, Pittsburgh
Title: 3-factor Hebbian learning rules in deep networks: an information bottleneck approach

November 2019
DeepMind/UCL PhD Workshop, London
Title: Associative memory in winner-take-all networks: from binary units to spikes

Posters

March 2022	COSYNE 2022
March 2020	COSYNE 2020
September 2019	NCCD 2019
March 2019	COSYNE 2019
June 2017	Ninth Traditional school ”Control, Information, Optimization”
September 2016	Information Technologies and Systems 2016
August 2016	Summer Research Program, EPFL
June 2016	Eighth Traditional school ”Control, Information, Optimization”
November 2015	58th MIPT Scientific Conference
September 2015	Amgen Program Cambridge symposium
August 2015	Amgen Program LMU symposium

Honors and awards

October 2022	NeurIPS 2022 Top Reviewers
September 2016 – December 2016	Increased State Academic Scholarship for research achievements
February 2014 – June 2016	Abramov fund scholarship for best non-senior students