TIMUR GARIPOV

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Research Interests

My research is focused on deep learning and probabilistic models. I am interested in deep generative models and empirical approaches to understanding training, robustness, and generalization of deep neural networks.

Education

Massachusetts Institute of Technology   Cambridge, MA, USA
PhD student, Computer Science (MIT EECS), **GPA**: 5.0/5.0   **2019** – **Present**
Research advisor: Tommi Jaakkola
Minor: Robotic Manipulation, Underactuated Robotics

Lomonosov Moscow State University   Moscow, Russia
MS (hons.) in Applied Mathematics and Computer Science, **GPA**: 5.0/5.0   **2017** – **2019**

Lomonosov Moscow State University   Moscow, Russia
BS (hons.) in Applied Mathematics and Computer Science, **GPA**: 5.0/5.0   **2013** – **2017**
Undergraduate student researcher in the Bayesian Methods Research Group advised by Dmitry Vetrov

Experience

MIT Computer Science & Artificial Intelligence Laboratory   Cambridge, MA, USA
Graduate Student Researcher   **September 2019** – **Present**
- Research on compositionality in deep generative models and out-of-distribution generalization.

Cruise LLC   Sunnyvale, CA, USA
PhD Intern, AI Research   **June 2023** – **September 2023**
- Designed algorithms for long-tail recognition and uncertainty estimation with Vision Transformers.
- Mentor: David Hayden

Google LLC   Cambridge, MA, USA (remote)
Research Intern   **June 2021** – **September 2021**
- Research in empirical understanding of memorization and function-space training dynamics in deep learning.
- Mentor: Chiyuan Zhang

Google LLC   London, UK
Intern, Software Engineering   **June 2023** – **September 2023**
- Designed and prototyped a TFX (TensorFlow Extended) pipeline for Google Play product price estimation.

Google LLC   Zurich, Switzerland
Intern, Software Engineering   **July 2018** – **September 2018**
- Optimized a data clustering pipeline used by the Google Shopping team with an efficient map-reduce algorithm.

Samsung AI Center, Moscow   Moscow, Russia
Research Engineer   **April 2018** – **June 2018, October 2018** – **May 2019**
- Research on understanding loss landscapes and training dynamics of deep neural networks, Bayesian deep learning.

Publications   (*equal contribution*)

Compositional Sculpting of Iterative Generative Processes   NeurIPS 2023
Timur Garipov, Sebastiaan De Peuter, Ge Yang, Vikas Garg, Samuel Kaski, Tommi Jaakkola   Video PDF

Adversarial Support Alignment   Spotlight presentation | ICLR 2022
Shangyuan Tong*, **Timur Garipov***, Yang Zhang, Shiyu Chang, Tommi Jaakkola   Video PDF

The Benefits of Pairwise Discriminators for Adversarial Training   Arxiv pre-print 2020
Shangyuan Tong*, **Timur Garipov***, Tommi Jaakkola   PDF

A Simple Baseline for Bayesian Uncertainty in Deep Learning   NeurIPS 2019
Wesley Maddox*, Pavel Izmailov*, **Timur Garipov***, Dmitry Vetrov, Andrew Gordon Wilson   Video PDF

Subspace Inference for Bayesian Deep Learning   UAI 2019
Wesley Maddox, Pavel Izmailov, Polina Kirichenko, **Timur Garipov**, Dmitry Vetrov, Andrew Gordon Wilson   PDF

[Loss Surfaces, Mode Connectivity, and Fast Ensembling of DNNs](#) Spotlight presentation | NeurIPS 2018
Timur Garipov*, Pavel Izmailov*, Dmitrii Podoprikhin*, Dmitry Vetrov, Andrew Gordon Wilson [Video](#) [PDF](#)

[Averaging Weights Leads to Wider Optima and Better Generalization](#) Oral presentation | UAI 2018
Pavel Izmailov*, Dmitrii Podoprikhin*, **Timur Garipov***, Dmitry Vetrov, Andrew Gordon Wilson [Video](#) [PDF](#)

[Ultimate tensorization: compressing convolutional and FC layers alike](#) NIPS Workshop 2016
Timur Garipov, Dmitry Podoprikhin, Alexander Novikov, Dmitry Vetrov [PDF](#)

Awards

MIT EECS Graduate Alumni Fellowship	**2019**
Russian State Scholarship for Academic Achievements	**2014 − 2017**
Diploma of winner at Russian Olympiad in Informatics	**2013**
Diploma of awardee at Russian Olympiad in Informatics	**2011, 2012**

Service

Reviewer for ICML 2018 TADGM Workshop, NeurIPS 2018, ICLR 2019, ICML 2019, UAI 2019, UAI 2020,
NeurIPS 2020 (top 10% reviewer award), NeurIPS 2021, AISTATS 2022, NeurIPS 2022, JMLR

Teaching

Teaching assistant, [MIT EECS](#)	**2020**
6.867: Machine Learning (graduate-level), 250+ students	Cambridge, MA, USA
Teaching assistant, [CMC MSU](#) and [Yandex School of Data Analysis](#)	**2017, 2018**
Bayesian Machine Learning & Probabilistic Graphical Models, 40+ students	Moscow, Russia
Lecturer, [AESC MSU](#) and competitive programming summer schools	**2013 − 2015**
Advanced Algorithms and Data Structures (high school elective course), 20-30 students	Moscow, Russia

Relevant Projects

Class project, MIT 6.832 (now 6.8210): [Underactuated Robotics](#), **Instructor**: [Russ Tedrake](#)	Spring 2022
Contact-Aware Lyapunov Controller Design via Alternating Optimization | joint work with Richard Li	[Video](#) [Report](#)
Class project, MIT 6.843 (now 6.4212): [Robotic Manipulation](#), **Instructor**: [Russ Tedrake](#)	Fall 2021
Robotic Arm Weightlifting via Trajectory Optimization	[Video](#) [Report](#)
Class project, MIT 6.850 (now 6.5320): Geometric Computing, **Instructor**: Piotr Indyk	Spring 2020
Implementation of Algorithms for Construction of Voronoi Diagram	[Video](#) [Report](#)

Technical Skills

Languages: Python, C++, C, SQL
Machine Learning: PyTorch, JAX, SciPy stack, Tensorflow
Technologies: Linux, GitHub, Google Cloud Platform, Docker, Drake, LaTeX