Ivan Skorokhodov

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Experience

Visual Computing Center, KAUST — **Thuwal, Saudi Arabia**
CS PhD student — *March 2020 - now*
I do my PhD under supervision of prof. Mohamed Elhoseiny. My research interests include generative models, inverse graphics (NeRF, mostly) and hypernetworks. I also have a small weakness on adversarial robustness.

Neural Networks and Deep Learning Lab, MIPT — **Moscow, Russia**
Deep Learning researcher — *February 2018 - March 2020*
The first project was on style transfer in text. We built a Transformer CycleGAN model that was later employed in NeuroDostoevsky exhibition. The second project was on loss landscape analysis: using mode connectivity ideas we demonstrated that the NN's loss surface contains arbitrary low-dimensional manifolds.

Visual Computing Center, KAUST — **Thuwal, Saudi Arabia**
Visiting student — *October 2019 - December 2019*
We investigated several normalization techniques in zero-shot learning and formulated a novel continual zero-shot learning problem. Both of the ideas were later incorporated into our class normalization paper.

Yandex — **Moscow, Russia**
Software Engineer — *March 2015 - October 2016*
I was implementing various product features for market.yandex.ru + some corresponding infrastructure work (deployment, unit/integration/stress tests, etc).

Federal State Statistics Service — **Moscow, Russia**
Software Engineer — *September 2014 - March 2015*
I built a web crawler that is able to construct dictionaries automatically: it parsed web pages, detected terms and definitions, categorized them, processed and filled the dictionary.

Brainarium — **Moscow, Russia**
Full-Stack Developer — *January 2014 - September 2014*
I built a kaggle-like platform with node.js + marionette.js stack and all the required infrastructure.

Education

KAUST — **Thuwal, Saudi Arabia**
Computer Science, GPA: 3.92/4 — *2020-now*

Yandex School of Data Analysis — **Moscow, Russia**
Data Analysis in Applied Sciences, current GPA: 4.77/5 — *2018-2021*

NRNU MEPhI — **Moscow, Russia**
M.S., Applied Informatics. GPA: 4.78/5 — *2014-2016*

NRNU MEPhI — **Moscow, Russia**
B.S. (with honors), Innovative Management. GPA: 4.88/5 — *2010-2014*

Publications

- Ivan Skorokhodov, Savva Ignatyev, Mohamed Elhoseiny "Adversarial Generation of Continuous Images" — arxiv preprint, https://arxiv.org/abs/2011.12026
- Ivan Skorokhodov, Mohamed Elhoseiny "Class Normalization for Zero-Shot Learning" — ICLR 2021, https://arxiv.org/abs/2006.11328

- Ivan Skorokhodov, Mikhail Burtsev "Loss Surface Sightseeing by Multi-Point Optimization" — "Beyond First Order Methods in ML" workshop, NeurIPS 2019, https://arxiv.org/abs/1910.03867
- Ivan Skorokhodov et al. "Semi-Supervised Neural Machine Translation with Language Models" — AMTA workshop, ACL 2018.

Teaching experience

Data-efficient Deep Learning by prof. Mohamed Elhoseiny at KAUST **Thuwal**
Teaching assistant *Fall 2020*

Theoretical Deep Learning II by Evgeniy Golikov at MIPT **Moscow**
Teaching assistant *Fall 2019*

Theoretical Deep Learning I by Evgeniy Golikov at MIPT **Moscow**
Teaching assistant, Lecturer for Information Bottleneck lectures *Spring 2019*
My lecture notes on the IB lectures (a draft) can be viewed here.

Additional education

Offline courses passed (extra)
- Deep Learning (advanced track) by Victor Lempitsky, YSDA, 2019. Grade 100/100, ranked 1/231
- Bayesian methods in ML by Dmitry Vetrov, YSDA, 2018 fall
- Neuro-Bayesian methods by Dmitry Vetrov, YSDA, 2019
- Information Theory by Nikolay Vereshchagin, YSDA, 2018 fall
- Computer Vision by Anton Konushin, YSDA
- Machine Learning at Tinkoff Fintech School, 2016.

DL books read
- "Deep learning" by I.Goodfellow, Y.Bengio, A.Courville, 2015 edition
- "Reinforcement Learning: An Introduction" by R.Sutton and A.Barto, 2017

Online courses passed
- CS-294 (Deep Reinforcement Learning), Berkeley university, 2017
- Algorithms, parts 1, 2 (CSC, stepik.org), 2016
- Machine Learning (Andrew Ng, coursera.org), 2016
- Machine Learning (K.Vorontsov, coursera.org), 2016
- Neural Networks (G.Hinton, coursera.org), 2016
- Learning how to learn (B.Oakley, coursera.org), 2016
- Modern Combinatorics (A.Raigorodsky, coursera.org), 2016
- Statistics basics, parts 1,2,3 (A.Karpov, stepik.org), 2016

Selected pet projects

RtRs *September 2020 - December 2020*
https://github.com/universome/rtrs
Simple ray tracing and rasterization framework written in rust. There are various features implemented: quadrics/mesh rendering, distributed ray tracing, camera movement, arcball controls, etc.

Gaussian non-uniform interpolation *December 2020*
https://github.com/universome/non-uniform-interpolation
A CUDA kernel which is able to interpolate points on a non-uniform grid. This is done by representing each point as a 2D gaussian distribution.

Firelab *November 2018 - August 2020*
https://github.com/universome/firelab
Python framework for running pytorch experiments. Supports multi-gpu hyperparameters optimization, training class boilerplate, tensorboard logging, etc.

Aladdin *October 2016 - March 2017*

https://github.com/universome/aladdin

A betting arbitrage bot written in rust.

Omniplan Web *May 2016 - August 2016*

https://github.com/universome/omniplan

A web view for omniplan platform written with react.js.

Skills

- **Programming**: python, rust, CUDA, C++, javascript;
- **ML/DL frameworks**: torch/torchvision/pytorch3d, tensorflow, sklearn, pandas, numpy;
- **Miscellaneous**: docker, git, bash, LaTeX.

Hackathons performance

- Junction (Espoo, 2018) — some minor prize
- Blockchain hackathon (Moscow, 2018), Blockchain Institute — 1st place
- Unsupervised machine translation (Dolgoprudny, 2018), MIPT — 2nd place
- Funhack (Moscow, 2018), Science Guide — some minor prize
- VK hackathon (Saint-Petersburg, 2016), VK — 1st place + people's choice award
- Battlehack (Moscow, 2016), Paypal
- BEM hackathon (Moscow, 2015), Yandex — 1st place
- Fintech hackathon (Moscow, 2015), HSE