

To whom it may concern,

My name is Ivan, I am 36 years old and I have been doing data science since 2009. Since 2014 I have been steadily leaning towards scientific research in machine learning and applied mathematics. Throughout my experience I have made research contributions, including GANs for steganography (ICMV 2019), variational sparsification for Complex-valued deep networks (ICML 2020), decentralized One-class SVM for anomaly detection, sparse inductive matrix completion, and etc. Simultaneously I have collaborated on applied projects for such industrial customers, as Huawei, Bosch, Airbus, and Sber, that were related to digital signal predistortion, predictive analytics, time series forecasting (ICMLA 2019, DSAA 2019), diagnostics of respiratory illnesses from audio recordings (IEEE JSTSP 2022), and reinforcement learning in operations research.<sup>1</sup>

I graduated from the Master's programme on computer science at the National Research University Higher School of Economics in 2016. In 2020 I completed my PhD studies in applied mathematics and computer science at Skolkovo Institute of Science and Technology, where my thesis research focused on model sparsification: sparse-regularized matrix decompositions, variational dropout for Complex-valued networks, and parameter pruning based on second-order approximations. Since graduation I have continued to improve my skills in software engineering while deepening knowledge of computer science, optimization, and probability.

I am a strong proponent of adopting modern devops practices to scientific research. To this end my advanced python skills, coupled with hands-on experience with C/Cython extensions, torch, and Jax, allow me to quickly iterate and generate reproducible scientific value.<sup>2</sup> Indeed, version-controlled experiments and artifacts, methodical ablations and aptly visualized results are crucial for evaluating hypotheses and placing the findings within a bigger picture. I firmly believe that a scientific paper should reflect the research process as it is: a journey from the motivation to a verifiable discovery, that has internal logic in its systematic inching through healthy self-criticism and meticulous comparisons against the related work.

---

<sup>1</sup><https://scholar.google.ru/citations?user=1F5HI3QAAAAJ>

<sup>2</sup><https://github.com/ivannz>

In 2021 my team won the NeurIPS Nethack Challenge for our hybrid neural-algorithmic hierarchical agent, and this encouraged me to seek for more impactful uses of reinforcement learning. Since then, I have been captivated by the synergy between machine learning approaches, particularly reinforcement learning, and classic search algorithms for combinatorial optimization and adaptive computations. In my opinion, efficient fine-tuning of solution techniques on practically relevant problems promises tangible advances in algorithm design, resource allocation, responsive social welfare and medicine.

Thank you for your consideration,

Ivan Nazarov