Nikita Karagodin

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Education & Technical Skills

2023 - now	**PhD in Computer Science**, Massachusetts Institute of Technology Advisor: **Prof. Yury Polyanskiy**
2017 - 2023	**BSc & MSc in Mathematics**, Saint Petersburg State University
2019 - 2022	**Data Science Program**, Computer Science Center
Relevant Coursework	Machine Learning, Deep Learning, NLP, Reinforcement Learning, Inference & Information, Statistics, Math
Languages & Libraries	python, pytorch, numpy, pandas, matplotlib, git

Work Experience

MIT LIDS, Research Assistant September 2023 - now

– Research project on mathematical theory of transformers

Huawei Technologies, R&D team, Senior Engineer December 2022 - July 2023

– Designed and implemented experiments using OpenFL framework for Federated Learning research

EIMI, Researcher June 2021 - August 2023

– Research project on product quantization

Pinely (HFT firm), R&D team, Data Scientist April 2022 - August 2022

– Analyzed market data using ML techniques to extract relevant features

– Explored cross-exchange arbitrage strategies

Lyceum 239 (St. Petersburg), Math center, Volunteering Teacher 2017 - 2021

Publications

N.Karagodin, Y.Polyanskiy, P.Rigollet, **Clustering in Causal Attention Masking**, arxiv.2411.04990, 38th Conference on Neural Information Processing Systems.

N.Karagodin, *A limit theorem for the last exit time over a moving nonlinear boundary for a Gaussian process*, Probability and Mathematical Statistics, 2022, Vol. 42, Fasc. 2, pages 195 - 217

N.Karagodin, M.Lifshits, *On the distribution of the last exit time over a slowly growing linear boundary for a Gaussian process*, Theory of Probability and Its Applications, 2021, 66:3, 337–347

Invited talks

Clustering Within Causal Transformer Attention Dynamics, 2024
Interacting Particle Systems in Data Science: From Theory to Applications, SIAM MDS

On the distribution of the last exit time over a slowly growing boundary for a Gaussian process, 2021
New Trends in Mathematical Stochastics, EIMI

Achievements

- **International Mathematical Competition, grand first prize (top 1.5%)** 2020
- Student research competition Möbius Contest, second prize 2021
- Student research competition by HSE & Siberian.Capital, first prize 2022
- International Mathematical Olympiad, silver medal (top 19%) 2016
- Russian Mathematical Olympiad, gold medal (top 4%) 2016