KIRILL BRILLIANTOV

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EDUCATION

ETH Zürich (ETH)   **Sep 2023 - Jun 2025**
Master of Computer Science, Current GPA: **5.51 / 6.0**   *Zürich, Switzerland*

Total Bachelor's GPA: **8.99/10.0**, Bachelor's thesis: [2]

Constructor (Jacobs) University Bremen (C(J)UB)   **Sep 2022 - Jun 2023**
<u>completed</u> *Bachelor of Computer Science*, GPA **1.5 / 1.0**   *Bremen, Germany*

Higher School of Economics Saint-Petersburg (HSE SPb)   **Sep 2019 - Aug 2022**
<u>discontinued</u> *Bachelor of Computer Science*, GPA **9.08 / 10.0**   *Saint-Petersburg, Russia*

RESEARCH EXPERIENCE

Computing Kazhdan's property (T) using RL   **Sep 2024 - Now**
research project, under supervision of Sergei Gukov   *Remote*

Studying Myopic Behavior in Goal-Reaching RL   **Sep 2024 - Now**
research project at ETH, under supervision of Marco Bagatella, LAS Group   *Zurich, Switzerland*

Benchmarking Summary Statistics Methods in GWAS   **Jun 2024 - Sep 2024**
research internship at ISTA, under supervision of Matthew Robinson, Marco Mondelli   *Vienna, Austria*

TLDR: We benchmarked summary statistics methods against classical ones in the inference of genetic effects problem

Uncertainty Quantification in Diffusion and Optimal Transport   **Nov 2023 - Feb 2024**
research project at ETH under supervision of Charlotte Bunne, LAS Group   *Zurich, Switzerland*

TLDR: We tried to add uncertainty into AlignedSB (Somnath, et. al. 2023) using Doob's transform

Studying Generalization Limits of Persistent Homology, [1]   **Jun 2023 - Aug 2023**
research internship at Aalto University under supervision of Vikas Garg, Amauri Souza   *Helsinki, Finland*

TLDR: We studied the generalization ability of PersLay (Carrière, et. al. 2019) using PAC-Bayes framework

Applying Language Models to Algebraic Topology, [2]   **Feb 2022 - May 2023**
bachelor's thesis at JUB, HSE SPb under supervision of Fedor Pavutnitksiy   *Remote*

paid position at EIMI from Feb 2022 to Jul 2022, GitHub

TLDR: We searched for specific elements from the intersection of the Free Group's subgroups using transformers

$(n, 4)$-MaxSAT and General MaxSAT, [5]   **Sep 2021 - Jan 2022**
coursework at HSE SPb under supervision of Ivan Bliznets   *Saint-Petersburg, Russia*

TLDR: We developed theoretically faster algorithm for solving $(n, 4)$-MaxSAT and general MaxSAT instances

PUBLICATIONS (ordered by date)

[1] [NIPS] **Kirill Brilliantov**, Amauri H. Souza, and Vikas Garg. "Compositional PAC-Bayes: Generalization of GNNs with persistence and beyond". In: *The Thirty-eighth Annual Conference on Neural Information Processing Systems*. 2024. URL: https://openreview.net/forum?id=ZNcJtNN3e8.

[2] [ICML] **Kirill Brilliantov**, Fedor Pavutnitskiy, Dmitry Pasechnyuk, and German Magai. "Applying language models to algebraic topology: generating simplicial cycles using multi-labeling in Wu's formula". In: *Forty-first International Conference on Machine Learning*. 2024. URL: https://openreview.net/forum?id=gQz3OhTkRE.

[3] [workshop] Denis Tarasov, **Kirill Brilliantov**, and Dmitrii Kharlapenko. "Is Value Functions Estimation with Classification Plug-and-play for Offline Reinforcement Learning?" In: *Automated Reinforcement Learning: Exploring Meta-Learning, AutoML, and LLMs*. 2024. URL: https://openreview.net/forum?id=UoVfuqUOtD.

[4] [AAAI] Vasily Alferov, Ivan Bliznets, and **Kirill Brilliantov**. "Parameterization of (Partial) Maximum Satisfiability above matching in a variable-clause graph". In: *Proc. Conf. AAAI Artif. Intell.* 38.8 (Mar. 2024), pp. 7918–7925.

[5] [AAAI] **Kirill Brilliantov**, Vasily Alferov, and Ivan Bliznets. "Improved algorithms for Maximum Satisfiability and its special cases". In: *Proc. Conf. AAAI Artif. Intell.* 37.4 (June 2023), pp. 3898–3905.

WORK & TEACHING EXPERIENCE

Research Assistant   **Apr 2024 - now**

part-time job at *Strategic Management and Innovation lab (ETH Zürich)*   *Zürich, Switzerland*

TLDR: I help the lab to conduct research in social sciences: scrap data, build models and visualizations. *Example project*: The contribution of chip manufacturer companies to Open-Source ML frameworks

Intern Backend Engineer   **Jul 2021 - Oct 2021**

internship at *Yandex.Direct*   *Saint-Petersburg, Russia*

TLDR: I was a part of a team supporting API of Yandex.Direct that is responsible for showing ads on Yandex.Browser

Teaching Assistant. Introduction to ML   **Apr 2024 - Jun 2024**

paid position at ETH Zürich   *Zürich, Switzerland*

TLDR: Helped typesetting lecture script - wrote one chapter ($\approx$ 3 hours of lectures) with handmade visualizations

Teaching Assistant. C++   **Sep 2022 - Dec 2022**

volunteer at HSE SPb   *Remote*

TLDR: Reviewed home assignments of **20** freshmen. Gave feedback on readability, style, architecture, and correctness.

Teaching Assistant. Mathematical Logic   **Apr 2022 - Jul 2022**

paid position at HSE SPb   *Saint-Petersburg, Russia*

TLDR: Checked **homeworks** and did **tutorials** for **14** freshmen. We covered: equinumerosity of sets, boolean functions, boolean schemes, basics of proof theory.

Coursework Supervisor. C++   **Feb 2022 - Jun 2022**

volunteer at HSE SPb   *Saint-Petersburg, Russia*

TLDR: Was a mentor for a group of **3** freshmen. Helped solving technical and architectural problems. Organized regular calls and did code review. The commission **higly** rated their result.