



ARTEM VYSOGORETS

Curriculum Vitae

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Citizenship: U.S.

EDUCATION

2019–2024 New York University, New York, NY

Doctor of Philosophy in Data Science (GPA: 3.9)

Thesis: *“On Efficient Approaches in Neural Networks”*

Advisor: Julia Kempe, PhD

2015–2019 University of Massachusetts Amherst, Amherst, MA

Bachelor of Science in Mathematics, Summa Cum Laude (GPA: 4.0)

Commonwealth Honors College Scholar with Greatest Distinction

Thesis: *“The Kazhdan-Lusztig Polynomial of a Deletion Matroid”*

Advisor: Tom Braden, PhD

WORK EXPERIENCE

Summer 2023 Senior Marketing Data Science Intern (IBM, New York, NY)

In a team of three delivered an ML solution for predicting client conversion based on a history of interactions with the company's assets. Responsibilities encompassed full ML/DS stack from R&D and data retrieval to modeling, and business interpretation.

Summer 2022 Quant Machine Learning Intern (Bloomberg LP, New York, NY)

Developed a PyTorch codebase in for benchmarking active learning methods with some of the most common (at the time) LLMs on internal text classification datasets. Authored a publication that proposes an efficient active learning protocol leveraging pre-trained embedding spaces.

Summer 2021 Research Intern (Samsung AI Center, New York, NY).

Assisted in a research project on optimal robot navigation based on the pre-learned cost-to-go function and image feed. Collected training data in a physics simulator and trained several neural network architectures (including hypernetworks) in PyTorch.

PUBLICATIONS

2024 [Robust Data Pruning: Uncovering and Overcoming Implicit Bias](#). *Preprint*.

Vysogorets, A., Ahuja, K., Kempe, J.

TL;DR: We conduct the first systematic study of data pruning algorithms in a fairness framework and propose a novel protocol that significantly improves worst-class accuracy by selecting appropriate pruning class-ratios.

- 2023–2024** [Deconstructing the Goldilocks Zone of Neural Network Initialization.](#) *The 41st International Conference on Machine Learning.*
Vysogorets, A., Dawid, A., Kempe, J.
 TL;DR: Through experiments and mathematical analysis of the training loss Hessian, we study the Goldilocks zone, originally introduced as the area of high positive loss curvature and local convexity.
- 2022–2023** [Towards Efficient Active Learning in NLP via Pretrained Representations.](#) *DMLR Workshop @ ICLR 2024.*
Vysogorets, A., Gopal, A.
 TL;DR: We use pretrained LLM embeddings within the active learning loop for efficient acquisition of unlabeled text data with minimal or no performance loss compared to LLM re-fine-tuning.
- 2021–2022** [Connectivity Matters: Neural Network Pruning Through the Lens of Effective Sparsity.](#) *Journal of Machine Learning Research, 24 (99).*
Vysogorets, A., Kempe, J.
 TL;DR: We introduce a sparsity metric that accounts for inactivated neurons after pruning and reevaluated popular pruning algorithms in this framework. Designed a universal method for layerwise sparsity distribution to obtain a state-of-the-art random pruning strategy. Conducted over 3,000 GPU-powered experiments in computer vision, e.g., ResNet-50 on ImageNet.
- 2021** [ImpressLearn: Continual Learning via Combined Task Impressions](#) *Preprint.*
 Bhardwaj, D., Kempe, J., **Vysogorets, A.,** Teng, A., Ezekwem, E.
 TL;DR: We design a continual learning strategy based on supermasks that allows positive knowledge transfer, incurs zero forgetting, and scales with the number of tasks favorably compared to similar baselines.
- 2018 – 2019** [Kazhdan-Lusztig Polynomials of Matroids Under Deletion.](#) *The Electronic Journal of Combinatorics, 27(1).*
 Braden T., **Vysogorets A.**
 TL;DR: We developed new matroid constructions that provably relate Kazhdan-Lusztig polynomial of matroid to that of its deletion. This result yields a closed formula for Kazhdan-Lusztig polynomials of a particular family of graphic matroids.

AWARDS & ACHIEVEMENTS

- Fall 2019** NSF Graduate Research Fellowship Program, Honorable Mention
- 2015 – 2019** Chancellor’s Award, University of Massachusetts Amherst, all semesters.
- April 2018** Coach of the UMass Amherst SCUDEM (Student Competition Using Differential Equations Modeling) team, 2nd place.

- April 2018** William F. Field Alumni Scholarship, UMass Amherst Alumni Association.
- December 2017** Member of the UMass Amherst Putnam Exam team.
- March 2017** Jacob-Cohen-Killam Math Competition for freshmen and sophomores, UMass Amherst, 3rd place.
- January 2017** Research Assistance Fellowship, Honors College, UMass Amherst
- February 2015** Moscow State University (MSU) math olympiad, 3rd prize (top 25%).
- February 2015** Moscow Institute for Physics and Technology math olympiad, 3rd prize.
- March 2012** Winner of the Moscow State University (MSU) math olympiad.

OTHER EXPERIENCE

- Fall 2020** Teaching Assistant, New York University
Course: Introduction to Data Science for PhD Students ([my own materials](#))
- Fall 2019** Grader, New York University
Course: Honors Abstract Algebra I
- Summer 2019** Student Researcher, Research in Industrial Projects for Students (RIPS),
Institute for Pure and Applied Mathematics, UCLA
Project: [Automating Artifact Detection in Video Games](#)
- 2018 – 2019** Teaching Assistant, University of Massachusetts Amherst
Course: Fundamental Concepts of Mathematics
- Summer 2018** Student Researcher, REU in Mathematics, San Diego State University.
Project: [Predicting Riemann Zeta Function Zeroes with Machine Learning](#).

OTHER

Coding experience: Python (TensorFlow/PyTorch), SQL, Java, C++, HPC, Singularity.

Languages: English, Russian.

Citizenship: U.S., Russian.