ARTEM VYSOGORETS

Curriculum Vitae

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EDUCATION

2019 – Present New York University, New York, NY
Doctor of Philosophy in Data Science (Expected: May 2024)
Current GPA: 3.9
Academic 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 title: *"The Kazhdan-Lusztig Polynomial of a Deletion Matroid"*
Thesis Advisor: Tom Braden, PhD

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, Commonwealth Honors College, UMass Amherst (advised by Eric Sommers, PhD).

February 2015 Moscow State University (MSU) math olympiad, 3rd prize (top 25%).

February 2015 Moscow Institute for Physics and Technology (MIPT) math olympiad, 3rd prize.

March 2012 Moscow State University (MSU) math olympiad, 1st prize (top 2%)

RESEARCH & PUBLICATIONS

2023 Deconstructing the Goldilocks Zone of Neural Network Initializations (NYU). I*n progress.*

Through experiments and analysis of the Gauss-Newton decomposition of the loss Hessian, we study the phenomenon of the Goldilocks zone, originally introduced as the area of high positive loss curvature in the optimization space of neural networks.

Summer 2022 Towards Efficient Active Learning in NLP via Pretrained Representations. (Quant Machine Learning Internship, Bloomberg LP). *Under Review in AAAI 2024*.

We used 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 (NYU) *Journal of Machine Learning Research, 24 (99).*

We introduced a sparsity metric that accounts for inactivated neurons after pruning and reevaluated several algorithms in this refined 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 (NYU). *Under Review in AAAI 2024*.

We designed a continual learning strategy based on supermasks that allows positive knowledge transfer, incurs zero forgetting, and scales with the number of task favorably compared to similar baselines.

2018 – 2019 Kazhdan-Lusztig Polynomials of Matroids Under Deletion (Undergraduate Thesis, UMass Amherst). *The Electronic Journal of Combinatorics, 27(1).*

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.

Summer 2018 Predicting Riemann Zeta Function Zeroes with Machine Learning (REU, San Diego State University).

We trained RNN for prediction of non-trivial zeroes of the Riemann zeta-function. Our model explains over 99% of the test variation; predictions are accurate to 1% of the separation between consecutive target values.

OTHER EXPERIENCE

Summer 2023 Senior Marketing Data Science Intern (IBM)
Project: Predicting account conversion based on client interactions.

Summer 2021 Research Intern (Samsung AI Center New York).
Project: Closed-loop optimal navigation for a robotic manipulator using image feed from an onboard camera.

Fall 2020 Teaching Assistant, Center for Data Science, New York University
Course: Introduction to Data Science for PhD Students (my own materials)

Fall 2019 Grader, Courant Institute of Mathematical Sciences, 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, Department of Mathematics and Statistics, University of Massachusetts Amherst
Course: Fundamental Concepts of Mathematics

OTHER SKILLS

Programming experience**:** Python, Java, C/C++, R (and deep learning libraries TensorFlow & PyTorch), Mathematica

Languages**:** fluent English, fluent Russian