ARTEM VYSOGORETS

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EDUCATION

- New York University (GPA: 3.89/4.0)
  Doctor of Philosophy in Data Science (Expected: May 2024)
  Advisor: Julia Kempe, Ph.D.

- University of Massachusetts Amherst (GPA: 4.0/4.0).
  Bachelor of Science in Mathematics, Summa Cum Laude (May 2019)
  Advisor: Tom Braden, Ph.D.
  Honors Thesis: *The Kazhdan-Lusztig Polynomial of a Deletion Matroid.*
  Commonwealth Honors College Scholar with Greatest Distinction

ACADEMIC AWARDS

- NSF Graduate Research Fellowship, Honorable Mention (2019)
- Chancellor's Award, UMass Amherst (2015–2019)
- William F. Field Alumni Scholarship, UMass Amherst Alumni Association (2018)
- Member of the UMass Amherst Putnam Exam team. (2017)
- Jacob–Cohen–Killam Math competition, UMass Amherst, 3rd place (2017)
- Moscow State University Math Olympiad, (3rd prize—2015, 1st prize—2012).

RESEARCH & WORK EXPERIENCE

- <u>Active Learning for BERT (Internship at Bloomberg LP, 2022).</u>
  Developed a flexible PyTorch codebase for experimenting with active learning algorithms that allows for user-specific models, datasets, and active learning methods. Benchmarked recent approaches on Bloomberg internal NLP datasets and proposed an active learning scheme that leverages transfer learning from pre-trained BERT models.

- <u>Connectivity Matters: Neural Network Pruning Through the Lens of Effective Sparsity (NYU, 2021).</u>
  Refined benchmarking of recent pruning algorithms using an improved sparsity measure. Using an analogy from thermodynamics, designed instantly computable layerwise sparsity quotas (IGQ) that outperform alternatives in random and magnitude pruning. Conducted over 3,000 GPU-powered experiments with ResNet-18 and VGG-16/19 on CIFAR-10/100, TinyImageNet, all implemented in TensorFlow ([arXiv: 2107.02306](https://arxiv.org/abs/2107.02306)). Under review in JMLR.

- <u>Visual Servoing for Robotic Manipulator (Internship at Samsung AI Center, 2021).</u>
  Collected over 100K image data in the PyBullet physics simulator. Trained several neural network architectures (including hypernetworks) with PyTorch to learn a cost-to-go function between pairs of poses based on associated images, which was later used for optimal closed-loop robot navigation.

- <u>Automating Anomaly Detection in Video Games (Institute for Pure and Applied Mathematics, UCLA, 2019).</u>

  Described and reproduced 12 most common graphics artefacts seen in video games using the OpenCV library in Python. Produced a synthetic dataset of 50,000 corrupted images, which was later used to train individual detectors for each artefact. These models were assembled into a final mixture-of-experts logistic regression model to perform glitch detection (arXiv: 2011.15103).

- <u>Kazhdan-Lusztig Polynomials of Deletion Matroids (Honors Thesis, 2018–2019)</u>
  Developed new matroid constructions that provably relate Kazhdan-Lusztig polynomial of a matroid to that of its deletion. For graphic matroids, imposed a condition for this result to reduce to a simpler equation, which was then used to prove a closed formula for Kazhdan-Lusztig polynomials of a particular family of graphic matroids (arXiv: 1909.09888).

- <u>Predicting Zeroes of the Riemann Zeta-Function Using Machine Learning Models (San Diego State University REU, 2018).</u>
  Compared Support Vector Regression and two neural network architectures in regressing non-trivial zeroes of the Riemann Zeta-function. Using R, collected and methodically selected features related to Riemann-zeta function; trained, validated and tuned neural network models. As a result, obtained models that explain over 99% of the unseen data variation and output predictions accurate to 1% of the separation between consecutive target values.

LEADERSHIP AND TEACHING

- Teaching Assistant, Introduction to Data Science for PhD Students (NYU, 2020).
  Led weekly lab meetings and graded homework. Designed my own <u>lab materials</u>.

- Teaching Assistant, Fundamental Concepts of Math (UMass Amherst, 2018–2019)
  Led 3 weekly discussion sessions, held office hours and graded weekly homework.

OTHER STRENGTHS

- Languages: English (fluent), Russian (native)
- Programming experience in Python (TensorFlow, PyTorch, OpenCV, Pandas, Scikit-Learn), R, Java