ARTEM VYSOGORETS

Machine Learning Engineer

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Machine Learning Engineer with a proven record of executing, owning, and publishing research in deep learning in CV and NLP, 6 years of coding experience, a strong mathematical and statistical background, and full-stack data science skills tested in a business environment. U.S. citizen since 2021.

EDUCATION

2019— 2024	**Ph.D. in Data Science (GPA 3.9)** New York University Julia Kempe's Lab	2015– 2019	**B.S. in Mathematics (GPA 4.0)** University of Massachusetts Amherst Commonwealth Honors College Scholar

EXPERIENCE

2024—Present — *Machine Learning Engineer (Data Science Platform @ Rockefeller University, New York, NY)*
Designing, developing, and integrating AI solutions into cutting-edge biomedical research; collaborating with multiple labs across the institution. Applications include neural signal processing, genomics, and RNA structure prediction.

2019—2024 — *Graduate Researcher (New York University)*
Developed, executed, and led research agenda with minimal supervision, published papers in venues such as ICLR, ICML and JMLR. Research focused on efficiency-related aspects of deep learning such as model compression, active learning, and data pruning, with applications in CV and NLP. Created multiple modular codebases and ran GPU-powered experiments on a HPC cluster.

Summer 2023 — *Senior Marketing Data Science Intern (IBM, New York, NY)*
In a team of three, predicted client conversion based on a history of interactions with the company's assets. Responsibilities included R&D, data retrieval with SQL and processing with Pandas, modeling with XGBoost, and business interpretation.

Summer 2022 — *Quant Machine Learning Intern (Bloomberg LP, New York, NY)*
Developed a PyTorch codebase (~3,000 lines of code) for benchmarking active learning methods with LLM on internal text classification datasets. Authored an algorithm that leverages pre-trained embedding spaces to speed up active learning by orders of magnitude (seconds vs. days).

Summer 2021 — *Research Intern (Samsung AI Center, New York, NY)*
Assisted in research 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 — DRoP: Distributionally Robust Data Pruning. *ICLR 2025.*
Vysogorets, A., Ahuja, K., Kempe, J.
TL;DR: We conduct the first systematic study of data pruning for distributional robustness and propose a novel, theoretically inspired protocol that significantly improves worst-case accuracy of models through random pruning with appropriate class priors.

2023 — Deconstructing the Goldilocks Zone of Neural Network Initialization. *ICML 2024.*
Vysogorets, A., Dawid, A., Kempe, J.
TL;DR: We analyze the geometric properties of loss landscapes by studying the region of excess positive curvature of the loss Hessian (known as the Goldilocks zone), previously believed to be related to the initialization norm, and indicate suitable initial points for training.

2022 [Towards Efficient Active Learning in NLP via Pretrained Representations](#). *DMLR @ ICLR 2024.*
Vysogorets, A., Gopal, A.
TL;DR: We leverage embedding spaces of pre-trained LLMs to speed up active learning by several orders of magnitude (seconds vs. days). Our method is validated using BERT on standard NLP benchmarks and is found to produce high-quality labeled datasets transferable across architectures.

2021 [Connectivity Matters: Neural Network Pruning Through the Lens of Effective Sparsity](#). *JMLR, 24 (99).*
Vysogorets, A., Kempe, J.
TL;DR: We find that existing measures of model compression underestimate the actual compression by several orders of magnitude due to implicitly inactivated neurons. We propose a refined measure and reevaluate popular pruning algorithms within this framework. Further, we design an optimal method for distributing sparsity across layers to obtain a state-of-the-art random pruning strategy.

2021 [ImpressLearn: Continual Learning via Combined Task Impressions](#). *Preprint.*
Bhardwaj, D., Kempe, J., **Vysogorets, A.**, Teng, A., Ezekwem, E.
TL;DR: We leverage supermasks to design a lifelong learning method that allows for knowledge transfer, incurs zero forgetting, and scales favorably with the number of tasks compared to baselines.

2020 [Kazhdan-Lusztig Polynomials of Matroids Under Deletion](#). *Electronic Journal of Combinatorics, 27(1).*
Braden T., **Vysogorets A.**
TL;DR: We developed new matroid constructions that provably relate the Kazhdan-Lusztig polynomial of a matroid to that of its deletion. This result yields a closed formula for the Kazhdan-Lusztig polynomials of a particular family of graphic matroids.

OTHER EXPERIENCE

2021 *Teaching Assistant*, NYU.
Course: Introduction to Data Science for PhD Students.
Led weekly lab meetings covering my own materials ([Jupyter notebooks](#)) and assisted with curating and grading homework assignments.

Summer 2019 *Student Researcher*, RIPS @ Institute for Pure and Applied Mathematics, UCLA
Project: [Automating Artifact Detection in Video Games](#)
In a team of four, we developed a model for detecting visual artefacts in video games. This work, sponsored by AMD, involved reverse-engineering the most common graphics glitches, reproducing them, curating a synthetic dataset, and training a final mixture of experts model.

Summer 2018 *Student Researcher*, REU in Mathematics, San Diego State University.
Project: [Predicting Riemann Zeta Function Zeroes with Machine Learning](#).
Formulated the prediction of Zeta function zeros as a time-series problem and solved it with neural networks.

AWARDS

2018 William F. Field Alumni Scholarship, UMass Amherst Alumni Association.

2017 Member of the UMass Amherst Putnam Exam team (47th / 575).

2017 Coach of the UMass team in a student competition on differential equation modeling

2017 Jacob-Cohen-Killam math competition, UMass Amherst, 3rd place.

2017 Research Assistance Fellowship, Honors College, UMass Amherst.

2012 Winner of the Moscow State University (MSU) math olympiad.

SKILLS

Coding Python (PyTorch, TensorFlow, Scikit-Learn), SQL, Java, C/C++, HPC, Git, Singularity, Spark, AWS

Courses Deep Learning, Machine Learning, NLP, Big Data, Probability, Statistics, Algorithms, Computer Systems, Convex Optimization, Combinatorics, Regression Analysis, Linear & Abstract Algebra

Lang-s English, Russian

Other Competitive coding ([LeetCode](#)), math competitions/olympiads, problem-solving, teaching.