Katrina Drozdov (Evtimova)

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SUMMARY

My research interests lie in self-supervised learning and multi-step generation with applications in learning representations and decoding images, videos, and other modalities.

I am actively seeking full-time applied research and MLE opportunities in industry starting in mid-2024.

EDUCATION

New York University   Sep 2018 - Sep 2024 (exp.)
Ph.D. in Data Science. Advised by Yann LeCun.   New York, NY
Research Interests: Self-supervised Learning, Representation Learning, Latent Variable Models.

New York University   Sep 2015 - May 2017
M.Sc. in Data Science.   New York, NY
Coursework Highlights: Deep Learning, Inference & Representation, Natural Language Understanding.

Harvard College   Sep 2009 - May 2013
B.A. in Mathematics. Secondary concentration in Economics.   Cambridge, MA
Coursework Highlights: Math 55 (Honors Abstract Algebra & Honors Real and Complex Analysis).

WORK EXPERIENCE

Facebook   May 2020 - Aug 2020
Research Intern, Facebook AI Research   New York, NY
Research Project: Using variance regularization to prevent collapse when training sparse image encoders.

Facebook   May 2019 - Aug 2019
Research Intern, Facebook AI Research   New York, NY
Research Project: Deep learning methods for learning hierarchical and sparse representations of images.

eBay   Jul 2017 - Aug 2018
Research Engineer, Merchandising Team   New York, NY
Developed scalable machine learning algorithms for item recommendations in Scala, deployed in production.

New York University   Oct 2016 - Mar 2017
Research Assistant, CILVR Lab   New York, NY
Implemented Markov Logic Networks for clinical data. In collaboration w/ Yacine Jernite and David Sontag.

Comcast   Jun 2016 - Aug 2016
Data Science Intern   New York, NY
Evaluated performance of TV programs using Hive to aggregate and analyze user data.

Columbia Business School   Jul 2013 - Jul 2015
Research Associate, Finance and Economics Division   New York, NY
Collected and analyzed financial data such as mutual fund performance using Python.

PUBLICATIONS

Video Representation Learning with Joint Embedding Predictive Architectures
K. Drozdov, R. Shwartz-Ziv, Y. LeCun. In Progress.
We develop a neural architecture that encodes object dynamics through self-supervised learning from video data. We incorporate variance regularization, which leads to improvements across multiple evaluation metrics.

Variance-Covariance Regularization Improves Representation Learning
Zhu, J., **Evtimova, K.**, Chen, Y., Shwartz-Ziv, R. and LeCun, Y. In submission, 2024.
We show that our regularization framework which encourages data representations to have high variance and low covariance enhances transfer learning in both the image and video domains.

Sparse Coding with Multi-layer Decoders using Variance Regularization
K. Evtimova, Y. LeCun. TMLR 2022.
ISTA is a classic algorithm for extracting sparse representations of data. We extend ISTA to work with deep neural networks, applying variance regularization to avoid collapse. Sparse image representations extracted with our method boost one-shot learning performance.

PUBLICATIONS (CONTINUED)

[Emergent Communication in a Multi-Modal, Multi-Step Referential Game](#)
K. Evtimova, A. Drozdov, D. Kiela, K. Cho. ICLR 2018.
We use reinforcement learning to train a multi-agent neural network architecture where agents cooperate to predict the class of an input image. The architecture is adaptive, using more computation for complex images.

TEACHING

Teaching Assistant, New York University   Spring 2020
Introduction to Machine Learning taught by Kyunghyun Cho at the Courant Institute.

Teaching Assistant, New York University   Spring 2019
Deep Learning taught by Yann LeCun at the Center for Data Science.

Teaching Assistant, Harvard College   Fall 2011
Linear Algebra and Applications taught by Vaibhav Gadre at the Math Department.

PROFESSIONAL SERVICE

Conference Reviewing: ICML '21, '22, '23, '24; NeurIPS '21, '22; ICLR '22, '23, '24. AISTATS '24.

Additional Reviewing: WiML Workshop at NeurIPS '17, Energy-based Models Workshop at ICLR '21.

STUDENT ADVISING

New York University
O. Che. Independent study on non-linear sparse coding.   Fall 2020

AWARDS & DISTINCTIONS

Highlighted Reviewer, International Conference on Learning Representations   Apr 2022

Best Deep Learning Project Recipient (Jointly with A. Drozdov)   Feb 2017
NYU Center for Data Science Award Ceremony. Award selected by Yann LeCun.
Project Title: Understanding Mutual Information and its Use in InfoGAN.

Ena Blyth Scholarship, Harvard College   Sep 2011 - May 2013
Selected as one of the two recipients of this annual award in the Math Department.

ACTIVITIES

Organiser, NYU AI School 2022   Sep 2021 - Jan 2022

President, NYU Center for Data Science Leadership Circle   Sep 2018 - May 2019

SKILLS & INTERESTS

Languages: Bulgarian (fluent), Russian (intermediate).

Personal Interests: I enjoy singing and was a member of The Noteables, a Broadway show choir group at Harvard. Another creative outlet that I engage in is designing art installations (my mixed media piece "Junk Mail" was featured at the 4th Annual NYU World Tour Pop-Up Gallery). I also enjoy experimenting with baking. Outside of my creative pursuits, I practice yoga and am fond of outdoor activities such as hiking and cycling.