Aram-Alexandre Pooladian

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Education

PhD (Data Science: Theory track) **New York University**
Advisor: Jonathan Niles-Weed *September 2020 — Present*
Funding: Data Science Fellowship, Data Science Supplementary Fellowship Grant, NSERC PGS-D
GPA: 4.00/4.00

MSc (Applied Mathematics) **McGill University**
Focus: Optimization and Deep Learning *May 2018 – May 2020*
Advisors: Tim Hoheisel and Adam Oberman
Funding: Lorne Trottier Fellowship, NSERC CGS-M, FRQNT Scholarship, Mitacs Scholarship
GPA: 4.00/4.00

BA (Honours Applied Mathematics) **McGill University**
CGPA: 3.93/4.00, *Majors GPA:* 4.00/4.00 *September 2014 – May 2018*
Awards and scholarships: NSERC Undergraduate Student Research Award (thrice received), FRQNT supplement funding (twice received), Charlie Peters Scholarship, First Class Honours, Dean's Honour List

Research Interests

High-dimensional statistics (e.g. computational and statistical optimal transport), optimization theory (stochastic, convex, and non-smooth), and problems in deep learning (e.g. normalizing flows)

Research Experience

Conference and workshop publications

- Finlay, C.*, Gerolin, A.*, Oberman, A., **Pooladian, A-A.*** (alphabetical) "Learning normalizing flows from Entropy-Kantorovich potentials", *Invertible Neural Networks, Normalizing Flows, and Explicit Likelihood Models* (*INNF+*), with contributing talk, 2020. [arXiv]

- **Pooladian, A-A.***, Finlay, C., Hoheisel, T., and Oberman, A. "A principled approach for generating adversarial images under non-smooth dissimiliarity metrics", *Proceedings of the 23rd International Conference on Artificial Intelligence and Statistics* (*AISTATS*), 2020.
  - Link to code and paper: `www.github.com/APooladian/ProxLogBarrierAttack` [PyTorch]

- Finlay, C.*, **Pooladian, A-A.***, and Oberman, A. "The LogBarrier attack: making effective use of decision boundary information ", *IEEE International Conference on Computer Vision* (*ICCV*), 2019
  - Link to code and paper: `www.github.com/APooladian/logbarrier` [PyTorch]

Journal articles

- Hoheisel, T., Pablos, B., **Pooladian A-A.**, Schwartz, A., and Steverango, L. (alphabetical) "A survey of one-parameter regularization methods for mathematical programs with vanishing constraints", *Optimization Methods and Software*. [PDF]

Asterisk next to author name indicates first or joint-first author contribution

Pre-prints and projects

- **Pooladian, A-A.** "Numerical methods for the Fermat-Weber problem in polyhedral norms"
- **Pooladian, A-A.***, Finlay, C., and Oberman, A. "Farkas layers: Don't shift the data, fix the geometry"
  - Link to code and paper: `www.github.com/APooladian/FarkasLayers` [PyTorch]

Research awards and scholarships

NSERC PGS-D Scholarship ($ 63 000 CAD) *May 2020 – May 2023*

Highly competitive graduate scholarship, ranked 8^{th} among applicants in my category

Data Science Fellowship ($180 000) *Fall 2020 – Fall 2025*

Full financial support from the Center for Data Science at New York University

Data Science Supplementary Fellowship Grant ($6 000) *Fall 2020*

IPAM Research Fellow at UCLA ($7 000) *March 2020 – June 2020*

Mitacs Scholarship with Desjardins ($13 000 CAD) *September 2019 – December 2019*

FRQNT Master's Scholarship ($35 000 CAD) *May 2019 – May 2021*

Highly competitive graduate scholarship, ranked 2^{nd} in my category

Lorne Trottier Fellowship ($5 000 CAD) *May 2018 – May 2019*

Awardees are nominated by the faculty to supplement NSERC CGS-M winners

NSERC CGS-M Scholarship ($17 500 CAD) *May 2018 – May 2019*

Highly competitive graduate stipend awarded to 3 of ∼32 applicants in the department

Talks

- Spotlight talk at the *2nd Workshop on Invertible Neural Networks, Normalizing Flows, and Explicit Likelihood Models* (INNF+), 2020
  - One of two 25-minute spotlight talks (selected out of 42 accepted papers)
- Oral presentation at the *23rd International Conference on Artificial Intelligence and Statistics*, 2020

Academic service and other activities

- Reviewer for the 24th International Conference on Artificial Intelligence and Statistics (AISTATS 2021)
- Reviewer for the Winter Conference on Applications of Computer Vision (WACV 2019)
- President of the Graduate Student Association of Mathematics and Statistics (GSAMS) (2019 – 2020)

Relevant graduate coursework

- *Probability and Statistics*: Mathematical Statistics, Advanced Probability Theorey, (Computational) Bayesian Statistics, Computational Intensive Statistics, Combinatorics, Econometrics I (theory) and II (applications), Concentration Phenomena, Models in Financial Economics
- *Optimization*: Continuous Optimization, Convex Analysis and Algorithms, Applied Machine Learning
- *Analysis*: Partial Differential Equations, Numerical Analysis

Programming languages

PyTorch (3 years experience), Python (4 years), MATLAB (5 years)