

# JOSEPH D VIVIANO

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## EDUCATION

2018–2020 **MSc., Computer Science**

Université de Montréal, QC/CA.

- Internship Supervised by [Dr. Yoshua Bengio](#) [↗](#)  
'Methods for controlling and utilizing saliency maps in medical imaging'.

2011–2013 **MSc. with Distinction, Biology**

York University, ON/CA.

- Thesis Supervised by [Dr. Keith Schneider](#) [↗](#)  
'Tremotopic mapping of the human thalamic reticular nucleus'.

2005–2009 **BSc. Hons., Psychology.**

Queen's University, ON/CA.

## PROFESSIONAL EXPERIENCE

2023–Now **ML Scientist**

Mila Québec AI Institute, QC/CA.

- Lead developer of [torchgfn](#) [↗](#) GFlowNet library (290 stars, 49 forks, 15 contributors).
- GFlowNet application collaborations: Antibody design ([Amgen](#) [↗](#)), distributed search scaling ([Intel](#) [↗](#)).
- Lab engineering support for ML for Science projects.
- Grant writing: Mila's compute infrastructure, AI for Metabolic Engineering with [Joint BioEnergy Institute](#) [↗](#).

2021–2022 **ML Research Scientist**

Deep Genomics [↗](#), QC/CA.

- Self-supervised learning for biological sequence representations.
- Methods for cell-type generalization.
- Drug screening anomaly detection pipeline.

2020–2021 **Applied Research Scientist**

Mila Québec AI Institute, QC/CA.

- Consult on, propose, and implement deep learning solutions for Mila's partners: Optimal portfolio allocation (finance) & digital forgery-detection (fraud).

2020 **Research Intern**

Google, PA/US.

- Uncertainty (epistemic) estimation methods for the [search ads predicted click through rate team](#) [↗](#).

2019 **Research Intern**

Imagia, QC/CA.

- Developed methods for combining clinical notes with medical images to improve classification performance and for localizing disease without explicit labels of where the disease is located in an image.

2014–2017 **Research Methods Specialist**

Centre for Addiction and Mental Health, ON/CA.

- Biomarkers for vulnerable [schizophrenia](#) [↗](#) and [Alzheimer's](#) [↗](#) patients.
- Designed, built, and managed compute infrastructure and data management platform.

## COMMUNITY SERVICE

2023-2025 **Area Chair**

Meta Reviewing

Paper Adjudication for [NeurIPS Datasets and Benchmarks Track](#) .

2014-2023 **Reviewing**

Paper reviews for conferences and journals

Reviews for [ICLR](#) , [NeurIPS Pre-registration in ML Workshop](#) , [Biological Psychiatry](#) , [MIDL](#) , [PNAS](#) , & [PLOS ONE](#) .

## SELECTED PUBLICATIONS

Boussif O, Ezzine LN, [Viviano JD](#), Koziarski M, Jain M, Malkin N, Bengio E, Assouel R, Bengio Y. Action abstractions for amortized sampling. ICLR, 2025.

[Viviano JD](#)\*, Younis OG\*, Choi S\*, Schmidt V, Bengio Y, Lahlau S. torchgfn: A PyTorch GFlowNet library. arXiv, 2025.

Bertin P, [Viviano JD](#), Tejada-Lapuerta A, Wang W, Bauer S, Theis FJ, Bengio Y. A scalable gene network model of regulatory dynamics in single cells. arXiv, 2025.

Delaunay P, Bouthillier X, Breuleux O, Ortiz-Gagné S, Bilaniuk O, Normandin F, Bergeron A, Carrez B, Alain G, Blanc S, [Viviano JD](#), et al. Introducing Milabench: Benchmarking Accelerators for AI. arXiv, 2024.

Cohen JP, [Viviano JD](#), Bertin P, Morrison P, Torabian P, Guarrera M, Lungren MP, Chaudhari A, Brooks R, Hashir M, Bertrand H. TorchXRyVision: A library of chest X-ray datasets and models. Medical Imaging with Deep Learning (MIDL), 2022.

Cohen JP, Cao T, [Viviano JD](#), Huang CW, Fralick M, Ghassemi M, Mamdani M, Greiner R, Bengio Y. Problems in the deployment of machine-learned models in health care. Canadian Medical Association Journal, 193(35), E1391-E1394.

Luccioni A, [Viviano JD](#). What's in the Box? A Preliminary Analysis of Undesirable Content in the Common Crawl Corpus. The Joint Conference of the Association for Computational Linguistics and the International Joint Conference on Natural Language Processing (ACL-IJCNLP), 2021.

[Viviano JD](#), Simpson B, Dutil F, Bengio Y, Cohen JP. Saliency is a Possible Red Herring When Diagnosing Poor Generalization. International Conference on Learning Representations (ICLR), 2021.

[Viviano JD](#), Buchanan RW, Calarco N, Gold J, Foussias G, Bhagwat N, Stefanik L, Hawco C, Malhotra AL, Voineskos AN, for the SPINS group. 2018. Resting-state connectivity biomarkers of cognitive performance and social function in schizophrenia spectrum disorders and healthy controls. Biological Psychiatry. 84(9), 665-674.

Bhagwat N, [Viviano JD](#), Voineskos AN, Chakravarty MM. 2018. Modeling and prediction of clinical symptom trajectories in Alzheimer's disease using longitudinal data. 2018. PLoS Computational Biology. 14(9), e1006376.

DeSimone K, [Viviano JD](#), Schneider KA. 2015. Population receptive field estimation reveals new retinotopic maps in human subcortex. Journal of Neuroscience, 35(27):9836-47.

[Viviano JD](#), Schneider KA. 2015. Interhemispheric interactions of the human thalamic reticular nucleus. Journal of Neuroscience, 35(5):2026-32.

## INVITED TALKS

2024

**Keynote Speaker**

FACSS SciX

Could an AI Understand a Scientist?

2023

Joint Genome Institute Annual User Meeting

Viviano JD. Considerations for Machine Learning-Aided Lab in the Loop Scientific Discovery.