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

2021–Now **ML Research Scientist** Deep Genomics, QC/CA.

- Self-supervised learning (auto-regressive and masked-language modelling) for biological sequence representations.
- Multi-modal methods facilitating biological sequence-to-sequence models to generalize to novel cell types.
- Anomaly detection pipeline for our drug screening platform.

2021–Now **Scientific Mentor** Creative Destruction Lab Montréal, QC/CA.

- Performed technical assessments of startups and provided feedback for a business and investor focused audience.
- Technical direction for startups in the NLP, CV, and ML for Bio spaces.

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).
- Collaboration with Mila researchers on medical applications research and cognitively-inspired AI.

2020 **PhD to VC Fellow** Fifty Years, CA/US.

- Course where I sourced, diligenced, and deep-tech pre-seed/seed stage companies, performed due diligence on them, & helped source technical talent.

2020 **Research Intern** Google, PA/US.

- Built a research pipeline to test ideas on an internal click through rate dataset.
- 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.
- Developed methods 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 (team of 5) a data management platform 22-node compute cluster, and QA tools used by team of 20.
- Contributions to 2 successfully funded grants & 15 published papers.

COMMUNITY ENGAGEMENT

Reviewing	Paper reviews for ICLR, NeurIPS Pre-registration in ML Workshop, Biological Psychiatry, MIDL, & PLOS ONE.
Instruction	Technical training on entry-level deep learning at MAIN 2019 and Brainhack 2019.

SELECTED PUBLICATIONS

* = equal contributions. For a complete list of my work, please see my Google Scholar.

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

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.