

New positions at MSc/PhD/Post-Doc level & technical support staff *Systems neuroscience, human population datasets, and advanced machine learning*

There is now increasing momentum in data sharing, open access, and data collection consortia that build richly annotated "big data" repositories for brain, behavior, and genes. This unprecedented data richness creates a rapidly growing potential to provide principled answers to human brain organization and its disturbances in brain disease. My lab will take the opportunity to explore, formalize, and predict brain phenotypes of hidden population variation captured across heterogeneous data sources to tackle open questions in systems neuroscience in a way that also paves new ways for precision medicine in brain health. My new research group is dedicated to such interdisciplinary challenges in a domain-agnostic approach (especially high- but also low-level cognitive processes) leveraging several recently emerged population datasets (such as UK Biobank, HCP, CamCAN, ABCD) across levels of observation (brain structure and function, consequences from brain lesion, or common-variant genetics) using a broad toolkit of bioinformatic methods, with a premium on cutting-edge machine-learning algorithms. New lab members will have full access to the Mila Artificial Intelligence Institute (see links below).

What you would work on: Revisit classical questions in systems neuroscience by capitalizing on the largest existing datasets of healthy and clinical human imaging populations using recently emerged machine learning solutions. Improve your data analysis instincts and actionable knowledge of the Python data science stack - a highly transferable skill set increasingly sought-after in both academia and industry.

What we expect:

- Outstanding motivation for work on inter-disciplinary challenges
- An analytical, problem-solving mindset
- Academic background in computer science, physics, biomedical engineering, psychology, medicine or similar
- Experience with programming is essential, especially in Python
- Fluent in written and oral English language

What we provide: Become part of the vibrant, stimulating ecosystem of research institutions that enjoy an international reputation for research excellence in the areas of neuroscience and machine/deep learning, with active collaborations to world-leading scientists and laboratories.

<https://mcgill.ca/about/about-mcgill>

<https://www.youtube.com/watch?v=oBPCgAEY1A0>

<https://mila.quebec/en/study/>

<https://globalnews.ca/news/4899040/massive-new-centre-for-ai-research-opens-in-montreal/>

[https://www.investquebec.com/documents/int/publications/Brochure IntelligenceArtificielle web AN.pdf](https://www.investquebec.com/documents/int/publications/Brochure_IntelligenceArtificielle_web_AN.pdf)

<https://www.mcgill.ca/bbme/danilo-bzdok>

Lab signature publications

1. Bzdok D, Ioannidis JPA. *Exploration, inference and prediction in neuroscience and biomedicine*. Trends in Neurosciences, Cell Press, 42:251-262, 2019.
2. Kernbach J, Yeo BTT, Smallwood J, Margulies D, Thiebaut de Schotten M, Walter H, Sabuncu M, Holmes A, Gramfort A, Varoquaux G, Thirion B, Bzdok D. *Subspecialization within Default Mode Nodes Characterized in 10,000 UK Biobank Participants*. Proceedings of the National Academy of Sciences of the USA, 115:12295-12300, 2018.
3. Bzdok D, Nichols TE, Smith SM. *Towards Algorithmic Analytics for Large-scale Datasets*. Nature Machine Intelligence, 1:296-306, 2019.

Practicals and salary

We provide **fully funded position** with **national funding**, in particular through the **Health Brains Healthy Lives** initiative (<https://www.mcgill.ca/hbhl/>). Position are available **starting now**. Applications will be considered until the positions are filled.

Contact

If you are interested, please send an email to danilo(DOT)bzdok(AT)mcgill(DOT)ca with the **subject “[newpositions2019]”**, including the following **3 attachments**:

- Cover letter describing personal qualifications and motivation for our research areas
- Curriculum vitae including programming experience
- Contact details of two people who we will ask to support your application

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