Jacob Sanz-Robinson

jacobsanz@gmail.com · +1-514-560-5284 · Montreal, Quebec · Canadian citizen · github.com/jacobsanz97

Education

PhD Candidate: Computational Neuroscience *Sep. 2020 - present*
McGill University, Montreal, QC, Canada
• Thesis topics: *Neuroimaging, Neuroinformatics, Big Data, Data Reproducibility, Machine Learning.*
• Supervisors: *Jean-Baptiste Poline, Tristan Glatard.*

Bachelor of Science: Honours Computer Science, *First Class Honours distinction* *Sep. 2016 - May 2020*
McGill University, Montreal, QC, Canada
• Minor in Musical Science and Technology.

Experience

Graduate Research Assistant, The Neuro, McGill University (NeuroDataScience, Big Data labs.) *Sep. 2020 - present*
• Developed 'NeuroCI', an open-source platform to address the ongoing reproducibility crisis in neuroimaging.
• NeuroCI facilitates reproducible and open neuroimaging experiments by enabling researchers to automatedly evaluate the robustness and variability of their results across multiple pipelines and datasets. This involved leveraging Continuous Integration to orchestrate distributed workflows for expensive computational analyses on large datasets (500GB-500TB).
• Designed an algorithm for automated brain segmentation quality control based on inter-pipeline result discrepancies.
• *Skills: Python, Bash, Git, Docker, Singularity, HPCs, Slurm, Continuous Integration, Matplotlib, DataLad.*

Teaching Assistantships, McGill University
• ABCD ReproNim AI/ML Course: Wrote assignments and held office hours on core concepts in ML, supervised / unsupervised learning, and ML applications to Neuroimaging for 80 students (*Python, Sk-learn, Nilearn*). *Apr. 2022*
• Fundamentals for Neuro-Data-Science (QLS 612) at McGill (Montreal, Canada): Organized logistics, gave lectures, held office hours, and wrote exam questions on Python and Data Visualization (*Matplotlib, Seaborn, Plotly*). *Jul. 2021*

Speech Science Intern, Nuance (Microsoft), Montreal, Canada *May - Sep. 2019*
• Transcription Engine Team: Developed an automatic redaction tool to detect and remove sensitive information simultaneously from transcriptions, graph representations, and audio files of customer phone calls with 95% accuracy, and used the tool to create data for client demonstrations (*Python, Bash)*.
• Voice Biometrics Team: Refactored an ensemble of pre-processing and machine learning tools used to identify a person from their speech recordings (*Python, Sk-learn*), resulting in a more robust API for the team to use.

Undergraduate Research Assistantships, McGill University *May 2018 - Dec. 2019*
• DDMAL lab: Developed a system for dynamically retrieving and converting Cantus Database musical score data into MIDI (*Javascript, MIDI)*. Created a Choir MIDI SoundFont using sample-based synthesis to play the score on the Cantus website (Git, *Vagrant, Docker, Django, Backbone Marionette)*.
• Prometheus lab: Developed Automatic Lip Sync pipeline using Neural Network classification to generate mouth shapes based on speech type with 84.2% accuracy. (*Python, Keras, Tensorflow, CMU Sphinx, Librosa, NumPy, Jupyter).*

Skills

• **Programming:** Python, Java, C, C++, Bash, OCaml, Assembly (MIPS), MATLAB, JavaScript.
• **Technologies:** Git, Slurm, Docker, Singularity, Unix, Matplotlib, Sk-learn, Keras, NumPy, Continuous Integration (GitHub Actions, CircleCI).
• **Neuroscience Software:** DataLad, FSL, ANTs, FreeSurfer, Boutiques, MRIQC, NiLearn, PyBIDS.
• **Languages:** Native fluency in English and Spanish.

Relevant Projects

• Correlating Anatomical Imaging Quality Metrics with Pipeline Segmentation Discrepancies	Ongoing
• NeuroCI: Continuous Integration of Neuroimaging Results Across Software Pipelines and Datasets	Ongoing
• Bayesian genetic algorithm: Solving mazes (Bayesian Statistics to optimize evolutive process)	May 2020
• Sentiment analysis CNN for song lyrics using GloVe word embeddings	Nov. 2019
• Computer Vision processing and CNN modeling to find the largest digit in an image.	Mar. 2019
• Digital audio sampler and modular effects processor (*Arduino, C++, MAX/MSP*).	Dec. 2018

Interests

• Playing, writing, recording, and producing music (my music on Spotify and Apple Music) • Judo: Cundinamarca departamental champion, 4th place Colombian national championships (2014) • Nutrition and fitness.

Selected Awards

• Fonds de recherche du Québec – Nature et technologies (FRQNT) B2X Research Scholarship	2023
• Unifying Neuroscience and Artificial Intelligence - Québec (UNIQUE) Excellence Scholarship	2023
• Fonds de recherche du Québec – Nature et technologies (FRQNT) B1X Research Scholarship	2022
• Canadian Open Neuroscience Platform (CONP) Research Scholarship.	2021
• McGill J. W. McConnell Scholarship (top 5% of entering class).	2016

Publications and Conferences

• J. Sanz-Robinson, M. Torabi, T.J. Wishard, T. Glatard, J.B. Poline. “Is between-pipeline variability affected by image quality?” [Abstract 2469]. Organization for Human Brain Mapping; July 22 - July 26, 2023; Montreal, Canada.
• J. Sanz-Robinson, A. Jahanpour, N. Phillips, T. Glatard, J.B. Poline. NeuroCI: Continuous Integration of Neuroimaging Results Across Software Pipelines and Datasets. IEEE eScience, vol. 18, October 2022 (link).
• J. Sanz-Robinson, J.B. Poline, T. Glatard. “Continuous Testing of Neuroimaging Results: Applications to Hearing Loss and Brain Structure” [Abstract 1185]. Organization for Human Brain Mapping; June 19 - June 23, 2022; Glasgow, Scotland.