Juan David Guerra

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EDUCATION

Mila - Quebec Artificial Intelligence Institute & Polytechnique Montréal — Montreal, QC
M.ASc Software Engineering — Sep 2024 - May 2026

- **Cumulative GPA:** 4.0/4.0
- **Principal Investigator:** Marco Bonizzato - Mila & Polytechnique Montréal
- **Cosupervisor:** Guillaume Lajoie - Mila & Université de Montréal
- **Research Area:** Amortized ML techniques for applications to Neuroprosthetics
- **Relevant Coursework:** 3D Reconstruction of Medical Images; Representation Learning; Continual Machine Learning; Neurotechnology and Neuroscience

McGill University — Montreal, QC
B.Sc. First-Class Honours Computer Science & Minor in Neuroscience — Sep 2020 - May 2024

- **Cumulative GPA:** 3.73 / 4.0
- **Relevant Coursework:** Honours Thesis in Computer Science; Reinforcement Learning; NLP; Responsible AI; Applied Machine Learning; Statistics; Artificial Intelligence; Honours Algorithms & Data Structures

PRIZES AND AWARDS

Natural Sciences and Engineering Research Council — Canada
Canada Graduate Scholarships - Master's Level — 2025

Fonds de Recherche du Québec — QC, Canada
Nature et Technologies Sector Master's Research Scholarship — 2025

UNIQUE Scientific Retreat — Montreal, QC
The UNIQUE Neuro-AI best poster award - Master's level — 2025

Gouvernment du Québec - Le Ministre d'Enseignement Supérieur — QC, Canada
Quebec Excellence Bursary for Computer Science — 2021

RESEARCH EXPERIENCE

Department of Computer Science — Montreal, QC
McGill University, Mila - Quebec AI Institute — June 2024 - August 2025

- Research collaborator at Professor Golnoosh Farnadi's EQUAL Lab
- Conducted an empirical, in-depth analysis of Large Language Models (LLMs) and their training dynamics
- Developed a scalable pipeline for training LLMs while reducing the onset of hallucinations
- Paper published at the 63rd Annual Meeting of the Association for Computational Linguistics

Department of Biomedical Engineering — Montreal, QC
McGill University, Mila - Quebec AI Institute — February 2023 - December 2024

- Undergraduate researcher under the supervision of Professor Danilo Bzdok.
- Using machine learning models to take brain activation (fMRI) to predict and understand the task the subject was performing in an international collaboration with Prof. Gesa Hartwigsen at the University of Leipzig
- Libraries used: NIlearn; Numpy; Pandas; Matplotlib; Scikit learn.

Department of Physiology — Montreal, QC
McGill University — June 2022 - February 2023

- Worked as a summer researcher and continued as a research assistant under the supervision of Professor Erik Cook
- Investigated correlations between visual stimuli and activation in mouse brains using statistical techniques and data processing
- Z-plane motion correction for two-photon imaging of neural activity in awake behaving mice

Selected Publications

1. S. Mohammadzadeh*, **J. D. Guerra***, M. Bonizzato, R. Rabbany, and G. Farnadi. 2025. Hallucination Detox: Sensitivity Dropout (SenD) for Large Language Model Training. In Proceedings of the 63rd Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers), pages 5538–5554, Vienna, Austria. Association for Computational Linguistics.

2. **J. D. Guerra**, T. Garbay, G. Lajoie, and M. Bonizzato, 'Bidirectional Information Flow (BIF) - A Sample Efficient Hierarchical Gaussian Process for Bayesian Optimization', May 16, 2025, arXiv: arXiv:2505.11294. doi: 10.48550/arXiv.2505.11294.

3. K. A. Williams, O. Numssen, **J. D. Guerra**, J. Kopal, D. Bzdok, and G. Hartwigsen, 'Inhibition of the inferior parietal lobe triggers state-dependent network adaptations', Heliyon, vol. 10, no. 21, Nov. 2024, doi: 10.1016/j.heliyon.2024.e39735.

Presentations & Workshops

Poster Presentation - Best Poster Award	Montreal, QC
UNIQUE Scientific Retreat	*October 2025*
Poster Presentation	Vienna, Austria
63rd Annual Meeting of the Association for Computational Linguistics	*July 2025*
Presenter - Neuroprosthetics Symposium	Montreal, QC
Université de Montréal	*June 2025*
Selected Oral Presentation	Montreal, QC
CIRCA Scientific Retreat	*April 2025*
Selected Oral Presentation	Montreal, QC
PolyCongré - Student Engineering Research Conference at Polytechnique Montréal	*March 2025*
Speaker - SNC Neurodiscussions	Montreal, QC
Université de Montréal Signalisation Neurale et la Circuiterie (SNC) Research Group	*March 2025*
Workshop Leader - Deep Dive on DeepLabCut	Montreal, QC
Université de Montréal, CIRCAteliers	*February 2025*
Poster Presentation	Vancouver, Canada
Safe Generative AI Workshop @ NeurIPS 2024	*December 2024*

Relevant Experience

Committee Member - CIRCAtelier — Montreal, QC
CIRCA - Centre Interdisciplinaire de Recherche sur le Cerveau et l'Apprentissage — *January 2025 - Ongoing*

- Organize regular workshops informing the CIRCA community of useful topics to disseminate knowledge
- Help find new topics and researchers to bring in new skills to the community

Mental Health Director — Montreal, QC
McGill Science Undergraduate Society — *May 2021 - May 2024*

- Researching mental health issues, policies, and activities among North American Universities
- Organizing projects (e.g., mentorship programs) to improve students' mental health at McGill University

Technical Skills
Python; Java; Matlab; C; Bash; Git; UNIX; OOP; Sci-Kit Learn; PyTorch; Pandas; MIPS

Concentrations
Gaussian Processes; Large Language Models; Foundation Models; Machine Learning; Applications of ML; Neuroprosthetics