Dominic Boutet

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OBJECTIVES

Investigating the neurophysiological mechanisms of brain activity in health and diseases through computational modelling and AI/ML approaches.

EDUCATION

Bachelor of Science, Interdisciplinary Science
McGill University, Qc, CA, expected May 2023
Concentration: Neuroscience (Major) & Computer Science (Minor)
Current cGPA: 3.97

RESEARCH EXPERIENCE

Research internship May 2021-Now
The Neuro at NeuroSPEED-BailletLab, Qc, CA

Summer research project (2021):

- Literature review of multi-scale modelling approaches with a focus on The Virtual Brain (TVB), and of model calibration approaches for dynamical models.
- Implementation of a simulation workflow and testing of the different calibration approaches for a TVB model with magnetoencephalography (MEG) data.

NSERC USRA summer project (2022):

- Design and implementation of a novel parameter space reduction algorithm that guides search-based optimization algorithms in high-dimensional space.
- Writing of the API for neural networks and other components of the algorithm.
- Implementation of accelerated simulator models for neurons and neural masses.
- Implementation of various search algorithms for performance testing.
- Writing of a manuscript reporting the algorithm and its performance.

VOLUNTEER EXPERIENCE

Undergraduate Research Lead January 2022-July 2022
Youreka Canada, CA

Youreka project:

- Acting as PI for a research project with a team of 3 high school students.
- We established a proof of concept for COVID-19 case forecasting using time series linear regression on vaccination data from daily US updates.
- We wrote a manuscript reporting our results, prepared a poster and performed a presentation at the Regionals. We won and also presented at the Nationals.

RELEVANT SKILLS

Computer skills:

- Extensive experience with relevant libraries such as numpy, pytorch, etc.
- Significant experience interacting with open source projects.
- Significant knowledge of AI/ML models and optimization algorithms.

General skills:

- Great creative problem solving capacities and autonomy.
- Great communication and teaching abilities in official and non-official settings.
- Good leadership abilities in a research or problem solving setting.