

PIERRE BOUCHER

Neuroscientist & Engineer

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EXPERIENCE

Master's Student

Boston University

📅 November 2020 – Present 📍 Boston, MA

- Uncovered evidence of prestimulus population dynamics associated with speed of response using a principal components analysis of 996 neurons and linear regression in MATLAB
- Demonstrated that prestimulus neural dynamics and spiking activity change as a function of the previous trial's outcome using a principal component analysis and a decoder
- Synthesized findings on impulsiveness in decision-making and prepared figures using Illustrator for submission as an abstract to a computational neuroscience conference

Research Assistant

Beth Israel Deaconess Medical Center

📅 Aug 2016 – Aug 2018 📍 Boston, MA

- Recruited, screened, scheduled, and conducted a TMS-EEG experiment to determine if TMS can be used to reliably evoke brain activity across visits and within several brain regions in twenty-four participants.
- Cleaned, processed, and analyzed ERPs and MEPs from over 30 participants' worth of TMS-EEG data employing EEGLAB and TESA in MATLAB.
- Designed and implemented a 120-participant research protocol to further understand TMS-EEG test-retest reliability.

Research Technologist

The Hospital for Sick Children

📅 Aug 2015 – Jun 2017 📍 Toronto, ON

- Lead a reward seeking experiment, in Dr. Jose Velazquez's lab, with rats trained to press a bar to receive rewarding intracranial electrical stimulation.
- Performed stereotaxic surgery to implant 2 recording and 1 stimulating electrode(s) in 11 rats.
- Processed 2 channels of LFP data from the nucleus accumbens to measure synchrony hypothesized to precede and predict bar presses in MATLAB.

EDUCATION

M.S. in Biomedical Engineering

Boston University

📅 Sept 2019 – Jan 2022

M.A. in Cognitive Neuroscience

University of Waterloo

📅 Sept 2012 – Dec 2014

MOST PROUD OF



Neuroscience nerd

Over 10 years of experience in neuroscience research



First author

Collected, analyzed, and wrote up data from years-long study for a peer-reviewed publication



Self-taught coder

Can code proficiently in over 5 languages

SKILLS/STRENGTHS

MATLAB Python Tensorflow R
LaTeX Adobe Illustrator

Signal Processing Statistical Analyses
Machine Learning Visualization
Troubleshooting Population Dynamics
Linear/Logistic Regression
Principal Component Analysis

PUBLICATIONS



Peer-Reviewed Publications

- Boucher, P., Ozdemir, R., Momi, D., Burke, M., Jannati, A., Fried, P., ... Santarnecchi, E. (2021). Sham-derived effects and the minimal reliability of theta burst stimulation. *Scientific Reports*, 11. doi:10.1038/s41598-021-98751-w
- Ozdemir, R., Tadayon, E., Boucher, P., Sun, H., Momi, D., Ganglberger, W., ... Shafi, M. (2021). Cortical responses to noninvasive perturbations enable individual brain fingerprinting. *Brain Stimulation*, 14. doi:10.1016/j.brs.2021.02.005



Conference Proceedings

- Boucher, P. O., Ozdemir, R. A., Tadayon, S., Santarnecchi, E., Pascual-Leone, A., & Shafi, M. (2019). Inter individual variability and reliability of cortico-spinal excitability modulation across intermittent, continuous and sham theta burst stimulation in humans.