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Skills: signal processing, research design, data collection, wrangling, and modelling, machine learning

Tools: MATLAB, Python, R, Shell, Linux, git, vim, EEG (BioSemi, EEGLAB), Psychophysiology (Biopac)

Work Experience

Data Scientist

2018-Present | SMART Lab, Department of Psychology, Ryerson University

- Creates tools for analysis and visualization of biological time-series data, empowering colleagues to understand their data
- PHZLAB (<https://github.com/gabenespoli/phzlab>)
 - Provides tools for importing, segmenting, processing, and visualization of multiple trials of time-series data
 - Automates the extraction of features, allowing for quick visualization of different processing pipelines
- Neural Entrainment Toolbox (<https://github.com/gabenespoli/entrainment>)
 - Wrangles EEG data to assess the entrainment of neurons in different parts of the brain
 - Automates the entire process, making it simple to investigate different combinations of entrainment frequencies, brain regions, and other parameters

Graduate Student

2012-2018 | SMART Lab, Department of Psychology, Ryerson University

- Designed and programmed experiments measuring neural entrainment to successfully assess the brain's response to musical input
- Used signal processing algorithms (e.g., filtering, FFT, independent component analysis (ICA)) to extract meaningful values from multi-channel biological data
- A/B testing to compare different analysis pipelines to reveal the optimal parameters for accurate analysis
- Gained a reputation in the department for EEG expertise, and was often consulted on the design and analysis of experiments
- Communicated technical ideas to non-technical audiences with ease
- Hosted biannual workshops on data analysis, signal processing and programming in MATLAB for 5-10 attendees, engaging others to discover the power of programming
- Developed scripts for automating the extraction of spectral features from EEG data, using both Fourier and wavelet methods

Research Operations Coordinator

2010-2012 | *Department of Psychology, Ryerson University*

- Collaborated with researchers on experimental design and analysis
- Offered training and support on various hardware and software research tools
- Managed department resources and liaised with manufacturers, ensuring smooth operation of the department
- Managed the purchasing of research tools, including EEG, VR, and eye tracking
- Selected as the teaching assistant for a graduate-level course on computational methods, empowering students with programming and analysis skills

Lab Manager

2007-2010 | *SMART Lab, Department of Psychology, Ryerson University*

- Ran participants in neural, physiological, and behavioural experiments, ensuring proper collection of data for the lab's experiments
- Heavily involved in the purchasing of equipment, setup, maintenance, and running of the lab's recording studio
- Recorded and edited audio/video stimuli (Pro Tools, Premiere Pro)
- Developed software analysis tools and instructed others on their use, effectively automating lab members' analyses
- Gained a reputation as the go-to person for tech and analysis
- Involved in researching and building prototypes of the Emoti-Chair, a sensory-substitution technology that presents music as vibration

Education

- PhD Psychology, 2018, Ryerson University
 - *Dissertation*: The neuroscience of groove: Neural mechanisms marrying music and movement
- Machine Learning Certificate, 2017, Stanford University via coursera.org
- MA Psychology, 2014, Ryerson University
 - *Thesis*: Musicianship and neural synchronization at multiple timescales
- BSc Psychology, 2007, McGill University
 - *Thesis*: Beauty in the body of the beholder: The physiological correlates of musical emotion

Interests

- Sports: golf, hockey (goalie), and cycling
- Music: jazz organ, folk and bluegrass guitar
- Food: gardening, cooking, and eating