

SKILLS

- **Programming languages:** Python, SPSS, R, and MATLAB
- **Machine learning:** TensorFlow, Keras, sklearn, PyTorch, supervised/unsupervised learning, convolutional neural networks, feature engineering, model optimization, Google Cloud Platform (GCP), and MLOps with Azure
- **Neuroimaging preprocessing and analysis:** fMRI, EEG, and fNIRS
- **Research methodology:** quantitative and qualitative statistic analysis, experimental design, project planning and execution, problem-solving and troubleshooting, data interpretation, SQL

EDUCATION

Master of Science (M.Sc.), University of Western Ontario, London, ON **Sept. 2022 – Aug. 2024**

- Thesis title: “*Machine Learning for Prognosis of Acute Brain-Injured Patients in the ICU Using EEG Complexity Analysis and Naturalistic Narrative Stimuli*”
- Supervisors: Dr. Adrian Owen & Dr. Derek Debecki

Bachelor of Arts (B.A.), King’s University College, London, ON **Sept. 2018 – Apr. 2022**

- Thesis title: “*Cortical Function of Super Refractory Status Epilepticus: An fMRI Case Study*”
- Supervisor: Dr. Loretta Norton

PROJECTS

EEG Complexity for Prognosis of ICU Patients [\[Link\]](#) *Python, sklearn, feature engineering* **Oct. 2022 – Aug. 2024**

- Used various algorithms to perform binary classification on EEG complexity features to assess ICU patient prognosis. Results showed 80% Accuracy in predicting a patient's future clinical outcome (AUC = 0.80–0.83).

MRI Image Segmentation of Mouse Kidneys and Bladders [\[Link\]](#) *Pytorch, TensorFlow, Keras* **Dec. 2023 – Jan. 2024**

- Manual segmentation of MRI images takes months of tedious work.
- I trained a convolutional neural network using a U-NET model architecture to accurately determine kidney and bladder volume in mice with cancer, achieving automated segmentation much more efficiently.
- Collaborated with immunology researchers to confirm the accuracy of the segmentation results to ensure the model can reliably assess cancer progression in preclinical studies.
- My model consistently produced results similar to those obtained by experienced manual segmenters, with a mean difference of only 2-5%, while being much faster. This improved the efficiency of preclinical research.

HRF of ICU Patients with Simultaneous EEG-fNIRS [\[Link\]](#) *TensorFlow, Optimization* **Sep. 2022 – Oct. 2022**

- Awarded a Provincial Scholarship for my written proposal to more accurately estimate the hemodynamic response function (HRF) of patients using a gradient descent-based search algorithm that maximizes the Pearson correlation between the recorded fNIRS and EEG signals. This method will vastly improve the accuracy and sensitivity of functional neuroimaging results as it accounts for important underlying physiological mechanisms.

ADDITIONAL EXPERIENCE

Teaching Assistant – PSYCH 2801, 1002, 1003 **Sept. 2022 – Apr. 2024**

University of Western Ontario, London, ON

- Led tutorial sessions to support undergraduate students in understanding and applying course concepts.
- Collaborated with the course coordinator to align teaching and marking strategies with course objectives.

Research Tech. – The Owen Lab **Oct. 2021 – Aug. 2022**

University of Western Ontario, London, ON

- Collected EEG, fNIRS, and fMRI data from ICU patients to investigate neural activity in critical care settings.
- Preprocessed and analyzed large datasets, applying advanced techniques for noise reduction, artifact removal, signal enhancement, statistical testing, data visualization, feature extraction, dimensionality reduction, etc...

Team Lead **Mar. 2018 – Jan. 2020**

Kognitive Sales Solutions, Windsor, ON

- Led a high-performing sales team during promotional events, driving product visibility and customer engagement.
- Initially hired as a Field Marketing Representative, exceeded sales targets, and was promoted to Team Lead.