Milo Sobral

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Github | LinkedIn | HuggingFace

Drawing on my experience in both academia and industry, I have developed a strong foundation in deep learning research and deployment, and am motivated to solve real-world issues with AI. I am eager to work in a scientific or engineering role in a mission-driven organization to contribute to this dynamic field.

Experience

MIST Lab, Montreal - Graduate Researcher — SEP 2021 - MAY 2024

- **Developed** a real-time EEG system (Portiloop) for **brain-wave stimulation based on a custom deep-learning model built using PyTorch and TFLite**, achieving sub-250ms latency on edge hardware and enhancing sleep spindle detection through new state-of-the-art adaptive algorithms.
- Successfully **deployed the models on edge computing devices and online** to support advanced studies on memory and sleep spindles for two neuroscience labs at McGill University and Concordia University.

Wrnch, Montreal - AI Tools Intern — MAY - SEP 2019 & MAY - SEP 2021

- Developed a **3D pose annotation tool using Unity**, improving annotation efficiency in three dimensions for over 200 annotators, facilitating the creation of large-scale, high-quality datasets used to train deep learning models.
- Contributed code to enhance **data processing pipeline** and client-facing C++ API used for monocular pose-estimation, interfacing with multiple **deep-learning systems including CUDA and PyTorch**.
- Enhanced availability of pose-estimation API by adding deep-learning pipeline support on **edge computing devices**.

Skills

- Expertise in Machine Learning using **PyTorch, TensorFlow, Keras**, and model deployment. Skilled at understanding and keeping up to date with state-of-the-art research and quantitative analysis and statistics.
- Proficient in programming using **Python, Go, SQL, Java, C, C#, Matlab,** and data science libraries (**pandas, numpy, matplotlib, poltly**) for data visualization and interpretation. Strong experience with version control (**Git**), project management (**Jira**), and deployment and continuous integration tools (**Docker, Maven, CMake).**
- Fluent in **English** and **French**, proficient in **Spanish** and **Portuguese**. Effective **collaboration and communication** in multidisciplinary teams, proven **problem-solving** abilities, and planning of collaborative research efforts.

Education

Polytechnique Montreal, Montreal
Master of Science (Research MSc) — Computer Science
Thesis title: "A Portable and Personalized Closed-Loop Brain Stimulation System"

McGill University, Montreal
Bachelor of Science (BSc) — Honours Software Engineering

Publications

- Sobral, Milo, *et al.* **"Advancing Closed-Loop Brain Stimulation: Continual Learning for Subject-Specific Sleep Spindle Detection."** Submitted to *IEEE Journal of Biomedical and Health Informatics* September 2024
- Valenchon, Nicolas, *et al.* "**The portiloop: A deep learning-based open science tool for closed-loop brain stimulation.**" *PLOS ONE*, vol. 17, no. 8, 22 Aug. 2022, arxiv.org/abs/2107.13473