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## **EXPERIENCE**

### **Beam Me Up Inc.**

#### ***Graduate Student Researcher***

Montréal, QC  
Sept/2021 - Dec/2022

- Implemented a python library to process raw Eye Tracking data by applying the latest feature extraction algorithms to data captured from consumer grade VR devices.
- Developed a virtual environment in Unity using C# language and successfully conducted experiments on 31 individuals at BMU labs.
- Developed a state-of-the-art distraction detection system in terms of accuracy (84%, best among those present in the literature) by combining features from EEG and Eye Tracking and applying a machine learning classification algorithm (SVM).
- Developed the first (in the literature) numerical indicator of the levels of distraction by combining linear dimensionality reduction techniques (Linear Discriminant Analysis) and interpolation.

### **Université de Montréal**

#### ***Teaching Assistant***

Montréal, QC  
Jan/2021 - July/2021

- Taught the undergraduate class IFT1015 - Introduction to programming - during winter 2021.
- Taught the undergraduate class IFT2255 - Software Engineering - during summer 2021.
- Held weekly lab sessions, graded students homeworks, and introduced weekly office hours (not done prior) to make communication with students faster and more effective.
- Held reviewing sessions before quizzes, midterms, and exams to help students fill their gaps.

### **Machine Learning Developer (Q&ABot)**

#### ***Skylar Marketing***

Montréal, QC  
Feb/2023 - May/2023

- Developed a tailored chat bot for a dental clinic, utilizing Large Language Models (LLM). This involved formulating user questions as prompts for OpenAI GPT-3, resulting in personalized responses.
- Expanded the bot's capabilities to handle queries related to dental aligners by enriching prompts with pertinent data. This process included extracting crucial information from an extensive 400-page document using Langchain and Embeddings, bolstering the bot's knowledge repository.
- Streamlined and integrated a real-time speech-to-speech interface via the Microsoft Azure API. This cutting-edge feature facilitated seamless interactions with the bot, enabling users to verbally pose questions and receive spoken responses, promoting dynamic conversational engagements.

### **Software Developer (Telegram Store)**

#### ***Skylar Marketing***

Montréal, QC  
May/2023 - Sep/2023

- Engineered a Python-based system that seamlessly linked the client's store with a payment platform, enabling automated notifications for Bitcoin payments and streamlined product shipping, effectively automating store operations.
- Designed and implemented a robust and enduring data management solution utilizing PostgreSQL, effectively overseeing User data, Transactions, and other essential information.
- Executed a successful deployment of the application on Heroku dynos while ensuring optimal database functionality through the Heroku Postgres add-on, ending in the delivery of the inaugural client bot.
- Conceptualized a consistent and secure database update process, utilizing Amazon S3 storage and versioning service, in conjunction with IAM for enhanced security measures.

## **EDUCATION**

### **Université de Montréal**

#### ***Master of Science, Computer Science***

Montréal, QC  
2020-2023

- **Coursework:** Fundamentals of Machine Learning · Probabilistic Graphical Models · Representation Learning · Theory of Deep Learning.
- **GPA:** 3.7/4.3.
- **Scholarships:** International Students Scholarship of value \$27,000 CAD.

### **Université Oran1 Ahmed Ben Bella (IGMO)**

#### ***Licence, Computer Science***

Oran, Algeria  
2015-2019

- Top 5% of the program in GPA.

## **PUBLICATIONS**

- Zarour, M., Ben Abdesslem, H., Frasson, C. (2023). **Distraction Detection and Monitoring Using Eye Tracking in Virtual Reality**. In: Frasson, C., Mylonas, P., Troussas, C. (eds) Augmented Intelligence and Intelligent Tutoring Systems. ITS 2023. Lecture Notes in Computer Science, vol 13891. Springer, Cham. [https://doi.org/10.1007/978-3-031-32883-1\\_44](https://doi.org/10.1007/978-3-031-32883-1_44)

## **PERSONAL PROJECTS AND SKILLS**

- Proficient in recent Machine Learning algorithms by implementing from scratch SVM, Logistic Regression, Naive Bayes, and Decision Trees using only Numpy.
- Proficient in recent Deep Learning architectures by implementing from scratch MLP, CNN, RNN, and LSTM using only Numpy.
- Proficient in Pytorch library after implementing in Pytorch DL architectures including CNN, Transformers, Vision Transformers (ViT), Variational Autoencoders (VAE), and Generative Adversarial Networks (GAN).
- Familiar with Large Language Models (LLM) by implementing a Q&A chat bot with ChatGPT and Embeddings to answer questions using knowledge from external sources including PDF documents.
- Proficient in applying machine learning to real-world problems, with a focus on diverse applications including computer vision with Convolutional Neural networks (CNN) and natural language processing with Transformers.

## **REWARDS AND ACHIEVEMENTS**

- First place in CodeML2022 hackathon challenge 6 using a Resnet50 CNN.