Jean Charle Yaacoub

j.yaacoub@mail.utoronto.ca | (343) 989-1792
linkedin.com/in/jean-yaacoub | github.com/jyaacoub

EDUCATION

Master of Science in Applied Computing (MScAC) *Sep. 2022 – June 2024*
University of Toronto
Artificial Intelligence Concentration
Courses: CSC2559 Trustworthy ML, CSC2552 Topics in Computational Social Science, CSC2231 Visual and Mobile Computing Systems, and CSC2545 Advanced Topics in ML – Causal Learning
cGPA: **3.85/4.0**

Bachelor of Computing (Honors) *Sep. 2018 – June 2022*
Queen's University (Kingston, ON)
Artificial Intelligence Specialization
cGPA: **4.17/4.3**

WORK EXPERIENCE

ScotiaBank - Retail Risk *Sept. 2024 – Present*
Software Developer (Contract)
- Maintaining and improving internal software for calculating **regulatory capital using risk models** of customer accounts. Side projects include working on ML tools for improving onboarding with **RAG**.

Princess Margaret Cancer Center - UHN *May 2023 – Aug. 2024*
ML Research Analyst (intern then full-time)
- Improved model memory capacity of proteins structure model by **1.7x** with quantization, CPU-offloading, and other techniques like low –memory attention and chunking which enabled us to explore **40% more** proteins, at **no increase in inference time**. This was a part of our research into building DL models for targeted therapy with Graph Neural Networks (GNNs).
- Boosted lab productivity by setting up automated ML pipelines for data collection, data labeling, and distributed model tuning.
- Collaborations with **rotation students** and other labs

Vancouver Prostate Centre - UBC *Aug. 2020 – Dec. 2021*
Undergraduate Academic Assistant (part and full-time)
- Helped improve the performance of Deep Docking (DD) which was designed to accelerate drug discovery utilizing AI and physical docking programs like AutoDock Vina. Optimized performance of code to run up to **3x faster** and improved model accuracy.
- Co-lead in the design and development of a GUI application that made DD **more accessible** to lab members and other researchers.
- Wrote and reviewed papers for **publication in Nature**.

PROJECTS

MScAC Thesis – MutDTA | PyTorch Geometric, Ray[Tune], Graph Networks, SLURM, Distributed Computing *May 2023 – Dec. 2023*
GNNs with Protein Dynamics for Enhanced Drug Targeting – github.com/jyaacoub/MutDTA
- Designed and iterated models under **resource constraints** using **distributed multi-node compute** and leveraged pretrained ESM-2 **foundational protein language models**.

CSC2231 – Visual and Mobile Computing Project | TensorFlow-Federated, FLower, Computer Vision (CV) *Winter 2023*
Federated Learning with Vision Transformers – github.com/jyaacoub/FL-ViT
- Researched the performance of novel ViT models under challenging **federated learning** environments for private **distributed** learning with **non-IID** conditions. Found that distilled ViTs were up to **2x faster** in training with less memory consumption.
- Identified that ViT's attention mechanisms effectively handle non-IID data challenges.

CSC2559 –Trustworthy ML Project | HuggingFace, Natural Language Processing (NLP) *Fall 2022*
Cross-Domain Attacks in NLP – github.com/jyaacoub/ Cross-Domain-Attacks-NLP
- Investigated the transferability of adversarial examples across problem domains in **NLP** and found drops in performance of only **5-12%** under different domains due to "non-robust features" (same as with computer vision).

OpenAI Hackathon for Climate Change | Natural Language Processing (NLP) *Fall 2022*
Net Zero AI – github.com/jyaacoub/CSR_summarizer *Nov. 11-14*
- Led a team to develop a tool that simplifies Corporate Social Responsibility reports using the **OpenAI** API for semantic search and summarization with **GPT-3**, resulting in a prototype and **demo within three days.**

Mayor's Innovation Challenge/QHacks | Computer Vision, Web dev, TensorFlow *Winter 2020*
Cycle AI – devpost.com/software/cycle-ai *Feb 1-31*
- Our team of four developed Cycle AI, an app for segmenting trash from recycling using computer vision. I programmed the front-end and integrated it with the backend TensorFlow model. We **won the hackathon** and pitched at the Mayors Innovation Challenge.

SKILLS

Languages: Python, JavaScript, Java, C, SAS, and MATLAB
Machine Learning: PyTorch, PyTorch Geometric, Lightning, Matplotlib, Pandas, Numpy, HuggingFace, Scikit-learn
HPC and Distributed Learning: SLURM, Ray[Tune,Train], FLower