Marco Jiralerspong

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EDUCATION

Université de Montréal - *Master's of Science, Computer Science* *September 2021 - May 2023 (Expected)*
Focus on machine learning, optimization and algorithmic game theory.

McGill University - *Bachelor of Arts, Computer Science Major* *September 2017 - December 2020*
Minors in Mathematics and Economics *(Dean's Honor List, Top 10%)* **GPA: 3.92/4.0**

- Keyfitz Major Renewable Undergraduate Scholarship ($9000), MiCM Summer Scholar ($6600)

Notable Coursework:

- **ML & AI:** Deep Learning, ML for Economics, Applied ML, Probabilistic Graphical Models, Artificial Intelligence
- **Math:** Honors Analysis (I-III), Honors Probability, Honors Graph Theory, Mathematical Foundations of ML, Algorithmic Game Theory

SKILLS

Languages: Python, C++, Java, JavaScript, SQL, PHP, C, HTML/CSS
Frameworks: NumPy, Pandas, PyTorch, Scikit-learn, Keras, PostgreSQL, Linux, Git, Docker, BeautifulSoup

WORK EXPERIENCE

Amazon Robotics - *(Returning) Software Development Engineer Intern* *Summer 2020 and Summer 2021*

- Developed C++ simulated robotic workcell capable of independently finding objects and picking them up with a robotic arm.
- Used RANSAC model and clustering algorithm to create a perception service that identifies objects from a pointcloud and computes an approach position/angle to pick them up in under 50ms.
- Built C++ benchmarking system allowing for easy evaluation of CPU/GPU/Memory performance of different robotic configurations.

Squarepoint Capital - *Quantitative Developer Intern* *January 2020 - May 2020*

- Helped parallelize various data analysis/model interpretability Python processes through the use of Slurm jobs allowing for order of magnitude performance improvements.
- Created frontend for visualization of model performance (integrating with Q backend) using Streamlit.
- Dockerized backend of ML interpretability/data analysis tools and ported over to a more robust/scalable deployment on GCP.

Network Dynamics Lab - *Student Research Assistant* *September 2019 - September 2020*

- Constructed robust data ingestion pipeline with used to parse 20+ million Reddit posts/comments into PostgreSQL database.
- Built Node.js Twitter chatbot that measures level of political engagement of users and sends surveys above a certain threshold.

PROJECTS & HACKATHONS

Regret in Online Clustering - *IFT 6269 Project (with Andjela Mladenovic)* *2021*

- Examined regret dynamics of online Follow-The-Leader versions of k-means and Gaussian Mixture Models.

Crypto Futures Trading System - *Personal Project* *2021*

- Python websocket client, order book aggregator and order management system for cryptocurrency futures trading (Binance/FTX).
- Implemented medium frequency (20+ transactions/minute) parallelized inter-exchange statistical arbitrage strategy.

Comparison of Neural Network Models for Interest Rate Forecasting - *Econ 420 Project* *2020*

- Evaluation of MLP, CNN and RNN model performance for interest rate forecasting using FRED-MD database.

Alternative Metrics for Generative Adversarial Networks - *COMP 598 Project* *2019*

- Analysis of various formulations of GANs, specifically the properties of the Kantorovich-Wasserstein and Cramér metrics and how they address many of the issues (mode collapse, gradient loss, etc.) found when using KL divergence.

HackTheNorth: CharityMatch (Website to match pictures of donations items to charities) - *Google Firebase Winner* *2019*
BlockHacks: Pigeon (SMS-based profile and authentication system for refugees) - *3rd Place* *2018*
BDC Hackathon: MapgeniQ (Visualization dashboard for genetic data) - *Finalist* *2018*