Thomas Jiralerspong

GitHub – LinkedIn – Videogames – thomasjiralerspong@gmail.com – (514) 625-9308

Technical Skills

Programming: Python, Keras, PyTorch, NumPy, Pandas, d3rlpy, SQL, Java, C#, C++, OCaml, C, Bash, JavaScript, R

Other: Jupyter Notebooks, Perforce, GitHub, Jira, Unix, Linux, Unity, HTML, CSS

Education

McGill University

Bachelor of Science - Honours Computer Science and Mathematics — Sep 2020 – Apr 2023 (expected)

- **4.0/4.0 GPA** - J.W. McConnell Scholarship (9000$), Dean's Honour List (Top 10% of students), Faculty of Science Scholarship
- **Relevant Coursework:** Representation Learning, Reinforcement Learning, Brain Inspired A.I., Honours Math for Machine Learning

Work Experience

Amazon Web Services (AWS) - S3 Team — *JavaScript, Python*

Software Development Engineer Intern – Vancouver, British Columbia — May 2022 - Present

- Developing a **JavaScript/Python** tool to automate the Incremental Backup recovery system for AWS S3 (stores ~**14 trillion** objects)

Mila – Prof. Doina Precup's Research Group — *Python, PyTorch*

Machine Learning Researcher – Montreal, Quebec — Jan 2022 – Present

- Conducting deep reinforcement learning research on combining options with affordances in a MiniGrid environment

Square Enix — *Unity, C#, TypeScript, Perforce, Jira*

Software Development Intern – Montreal, Quebec — May 2021 – Aug 2021

- Designed and implemented a localization system using **Unity/C#** to allow a MOBA game to be translated into over **10 languages**
- Created a system using **C#/TypeScript** to allow **PlayFab** push notifications to redirect users to specific views

Expedia Group — *React, TypeScript, GitHub, Trello*

Software Development Intern – Montreal, Quebec — Jun 2019 – Aug 2019

- Developed a **React/TypeScript** tool to identify which elements of a webpage are broken and conveniently display them to developers
- Presented the finished tool to over **50 developers** for use in their daily work when debugging webpages and received good feedback

Papers

Deep RL for Mechanical Ventilation Treatment (co-first author) – Paper — *d3rlpy, PyTorch, Pandas, SQL*

Published at RLDM 2022 — Jun 2021 – Feb 2022

- Received the **highest score out of all 25 papers** at University of Toronto's International ML Research Competition *Project X* (25 000$)
- Preprocessed medical data for over **50 000 patients** from the MIMIC-III Clinical Database using **Pandas** and **SQL**
- Developed the entire training pipeline including a LSTM autoencoder to encode a patient's entire history into their current state
- Created DeepVent, the first deep RL model for optimization of mechanical ventilation treatment

Modelling the Evolution of Arctic Sea Ice Extent – Paper — *R*

McGill University Department of Mathematics and Statistics — Jan 2020 – May 2020

- Used ARIMA models in **R** to model the evolution of arctic sea ice extent under the supervision of Professor Christian Genest

Projects

Generating Music Using a LSTM Network with Attention – DevPost, GitHub — *Keras, NumPy, Flask*

Deep Q-Networks Implementation - GitHub — *PyTorch*

Multi-headed Self-Attention Block Implementation - GitHub — *NumPy, PyTorch*

- Implemented a multi-headed self-attention block using only basic **PyTorch** for use in a vision transformer trained on CIFAR-10

CNN to Learn the Regulatory Code of the Accessible Genome - GitHub — *NumPy, PyTorch*

- Reimplemented the CNN specified in this paper using **PyTorch**, trained it, and analyzed the results

Mars Rover Obstacle Mapping Node (McGill Robotics – GitHub private) — *ROS, Python, NumPy, OpenCV, Unity*

- Developed a **Python/ROS** node to transform distance data from a depth camera into a list of obstacles surrounding a rover

Teaching Experience

McGill University — *Unix, Bash, C*

Teaching Assistant – COMP206 Software Systems (449 students) — Aug 2021 – May 2022

McGill Artificial Intelligence Society — *Python, NumPy, PyTorch*

Technical Project Manager – Accelerated Introduction to ML Bootcamp (30 students) — May 2021 - Present

- Supervising more than **10 students/semester** to help them complete their final machine learning related project