Thomas Jiralerspong

Website – Google Scholar – 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, R, JavaScript, HTML, CSS

Other: Jupyter Notebooks, Slurm, Perforce, Docker, GitHub, Jira, Unix, Linux, Unity

Education

McGill University

Bachelor of Science - Honours Computer Science and Mathematics Sep 2020 – Apr 2023 (Will continue as Masters student in Sep 2023)

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

Research Experience

Vector Institute for Artificial Intelligence *Python*

Machine Learning Research Intern – Toronto, Ontario Sep 2022 – Present

- Developing a reinforcement learning system for energy efficient data center HVAC control based on the HNP algorithm

Mila – Prof. Blake Richards' Research Group *Python, PyTorch, Slurm*

Machine Learning Researcher – Montreal, Quebec Sep 2022 – Present

- Contributing to developing ConSpec, a new reinforcement learning system for environments with sparse rewards

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

Machine Learning Researcher – Montreal, Quebec Jan 2022 – Present

- Co-leading a project to add temporally extended models to the model-based reinforcement learning algorithm Director

Professional Experience

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

Software Development Engineer Intern – Vancouver, British Columbia May 2022 – Jul 2022

- Developed a **JavaScript/Python** tool to automate the Incremental Backup recovery system for AWS S3 (stores ~**14 trillion** objects)
- Reduced recovery time by **5h/week** and **received a full time return offer** upon finishing the internship

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**

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

Papers

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

To be published as conference paper at IAAI 2023, published as poster 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*

Rainbow Q-Learning in Jelly-Bean World - Report *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

Extracurriculars

McGill Artificial Intelligence Society *Python, NumPy, PyTorch*

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

- Helping more than 10 students/semester to complete their final machine learning related project