Thomas Jiralerspong

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

Education

McGill University
Bachelor of Science - Honours Computer Science Sep 2020 – Apr 2023 (expected)

- **GPA: 4.0/4.0**
- **Relevant Coursework:** Representation Learning, Reinforcement Learning, Brain Inspired AI., Network Science, Math for ML, Probabilistic Programming

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, GitHub, Jira, Unix, Linux, Unity

Research Experience

Vector Institute for Artificial Intelligence
Machine Learning Research Intern – Toronto, Ontario Sep 2022 – Present

Ongoing project: Reinforcement learning system for energy efficient data center HVAC control

- Transformed the model-based Hyperspace Neighbor Penetration algorithm into a model-free algorithm that is compatible with an existing simulator

Mila/McGill University – Supervised by Prof. Blake Richards
Undergraduate Researcher – Montreal, Quebec Sep 2022 – Present

Ongoing paper: *Contrastive Introspection (ConSpec) to Rapidly Identify Invariant Steps for Success*

- Adapted ConSpec to work on MuJoCo, developed a sparsified version of MuJoCo, demonstrated ConSpec's superiority on these environments

Mila/McGill University – Supervised by Prof. Doina Precup
Undergraduate Researcher – Montreal, Quebec Jan 2022 – Present

Ongoing project: Deep reinforcement learning with temporally extended models and affordance-aware tree-search planning

- Developed the initial research proposal, implemented our algorithm, currently comparing our algorithm to baselines on a variety of environments

Project X – Machine Learning Research Competition
Co-Leader of McGill's Team Jun 2021 – Feb 2022

Paper "Towards Safe Mechanical Ventilation Treatment Using Deep Offline Reinforcement Learning" *(co-first author) (accepted to IAAI 2023)*

- Developed the research proposal, preprocessed data from over 50 000 patients, implemented the training pipeline, trained policies to get the final results

McGill University – Supervised by Prof. Christian Genest
Collegiate Researcher – Montreal, Quebec Jan 2020 – May 2020

Paper: "Modelling the Evolution of Arctic Ice Extent using ARIMA models in R" *(co-first author)*

Professional Experience

Amazon Web Services (AWS) – S3 Team
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 (reduced recovery time by 5h/week)

Square Enix
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
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

Publications

Towards Safe Mechanical Ventilation Treatment Using Deep Offline Reinforcement Learning – Link
F. Kondrup*, **T. Jiralerspong***, E. Lau*, N. de Lara, J. Shkrob, M.D. Tran, D. Precup, S. Basu (Accepted) IAAI, 2023

Contrastive Introspection (ConSpec) to Rapidly Identify Invariant Prototypes for Success in RL – Link
C. Sun, W. Yang, B. Alsbury-Nealy, **T. Jiralerspong**, Y. Bengio, B. Richards Preprint, 2022

Network Analysis of the iNaturalist Citizen Science Community – Link
Y. Liu* & **T. Jiralerspong***
Preprint, 2022

Modelling the Evolution of Arctic Sea Ice Extent – Link
X. Fan*, **T. Jiralerspong***, K. Zhu*, B. Nasri, C. Genest Preprint, 2020

*Equal Contribution

Projects

Rainbow Q-Learning in Jelly-Bean World – Project Report 2022
Generating Music Using a LSTM Network with Attention – DevPost, GitHub 2020