# Thomas Jiralerspong


Université de Montréal
Mila
Montreal, Canada

thomasjiralerspong@gmail.com
superkaiba.github.io
+1 (514) 625-9308

Google Scholar
LinkedIn
GitHub


## Education

**Université de Montréal**
M.Sc., Computer Science — *(Expected) 2025*
Supervisors: Yoshua Bengio & Doina Precup
Fields: Neuro AI, Deep Learning, Reinforcement Learning

**McGill University**
B.Sc., Honours Computer Science — *2023*
GPA: 4.00/4.00
Supervisors: Blake Richards & Doina Precup
Fields: Reinforcement Learning, Neuro AI
Exchange semester at the National University of Singapore

## Refereed Conferences

Chen Sun, Wannan Yang, **Thomas Jiralerspong**, Dane Malenfant, Benjamin Alsbury-Nealy, Yoshua Bengio, Blake Richards. "Contrastive Retrospection: honing in on critical steps for rapid learning and generalization in RL." In *Thirty-seventh Annual Conference on Neural Information Processing Systems (NeurIPS)*. 2023.

Flemming Kondrup*, **Thomas Jiralerspong***, Elaine Lau, Nathan de Lara, Jacob Shkrob, My Duc Tran, Doina Precup, Sumana Basu. "Towards Safe Mechanical Ventilation Treatment Using Deep Offline Reinforcement Learning." In *Thirty-seventh AAAI Conference on Artificial Intelligence (AAAI)*. 2023.

Marshall Wang, John Willes, **Thomas Jiralerspong**, Matin Moezzi. "A Comparison of Classical and Deep Reinforcement Learning Methods for HVAC Control." In *20th IEEE International Conference on Ubiquitous Intelligence and Computing (UIC)*. 2023.

## Refereed Workshops

**Thomas Jiralerspong***, Flemming Kondrup*, Doina Precup, Khimya Khetarpal. "Forecaster: Towards Temporally Abstract Tree-Search Planning from Pixels." In *Seventh Workshop on Generalization in Planning at NeurIPS*. 2023.

Flemming Kondrup*, **Thomas Jiralerspong***, Elaine Lau, Nathan de Lara, Jacob Shkrob, My Duc Tran, Doina Precup, Sumana Basu. "Deep Conservative Reinforcement Learning for Personalization of Mechanical Ventilation Treatment." In *The Multi-disciplinary Conference on Reinforcement Learning and Decision Making (RLDM)*. 2022.

## Under Review

**Thomas Jiralerspong***, Xiaoyin Chen*, Yash More, Vedant Shah, Yoshua Bengio. "Efficient Causal Graph Discovery Using Large Language Models." Under Review at *International Conference on Machine Learning (ICML)*. 2024.

* Equal Contribution

## Preprints

Yu Lu Liu*, **Thomas Jiralerspong***. "Network Analysis of the iNaturalist Citizen Science Community." arXiv preprint arXiv:2310.10693.

## Research Experience

**Waabi**
*Deep Learning Research Intern* *Jun 2023 – Aug 2023*
*Mentored by Kelvin Wong and Chris Zhang*
**Project:** Realistic and controllable traffic simulation using a transformer based variational autoencoder

**Reasoning and Learning Lab, Mila/McGill University**
*Research Intern* *Jan 2022 – Aug 2023*
*Supervised by Prof. Doina Precup*
**Project:** Model-based reinforcement learning with affordance aware tree-search planning directly from pixels

**Learning in Neural Circuits Lab, Mila/McGill University**
*Research Intern* *Sep 2022 – Aug 2023*
*Supervised by Prof. Blake Richards*
**Project:** Contrastive learning to discover critical states for reinforcement learning in sparse reward environments

**Vector Institute for A.I.**
*Machine Learning Research Intern* *Sep 2022 – Dec 2022*
*Mentored by John Willes and Marshall Wang*
**Project:** Model-based reinforcement learning for HVAC control

**Project X, Machine Learning Research Competition**
*Co-leader of McGill's Team* *Jun 2021 – Feb 2022*
*Received the highest score out of 25 submitted papers*
**Project:** Deep offline conservative reinforcement learning for mechanical ventilation treatment

## Industry Experience

**Amazon Web Services (AWS) – S3 Team**
*Software Development Engineer Intern* *May 2022 – Jul 2022*
**Project:** JavaScript/Python tool to automate the Incremental Backup recovery system for AWS S3 (stores ∼14 trillion objects)

**Square Enix**
*Software Development Intern* *May 2021 – Aug 2021*
**Project:** Localization system to allow a MOBA game to be translated into over 10 languages

**Expedia**
*Software Development Intern* *May 2021 – Aug 2021*
**Project:** React/TypeScript tool to identify which elements of a webpage are broken and conveniently display them to developers

## Teaching

**Université de Montréal**
Teaching Assistant, Representation Learning — 2023

**McGill A.I. Society**
Organizer/Teaching Assistant, Accelerated Intro to ML — 2021 – 2023

**McGill University**
Teaching Assistant, Software Systems — 2021 – 2022
Guest Lecturer, Theory of Machine Learning — 2022

## Honors

Chosen to attend the 10th Heidelberg Laureate Forum — 2023
NSERC Canada Graduate Scholarship (17500$) — 2023
University of Montreal Master's Scholarship (5000$) — 2023
McGill Mobility Bursary for Exchanges (6000$) — 2022
Winner of UofT AI's Project X competition (25000$) — 2022
J.W. McConnell Major Entrance Scholarship (9000$) — 2020 – 2022
CIBPA Foundation Bursary (1000$, 2500$, 1000$) — 2021, 2022, 2023
Marianopolis College Valedictorian — 2020
Governor General of Canada's Academic Medal — 2020

## Invited Talks

Canadian Undergraduate Conference on AI (CUCAI) — 2022
University of Toronto AI Conference — 2022
McGill AI Society Learnathon — 2022

## Professional Activities

**Mila**
Lab Representative — 2023 – Present

**McGill AI Society**
Senior Advisor — 2023 – Present
Technical Project Manager — 2021 – 2023

**Montreal AI & Neuroscience Conference**
Organizer – Introduction to deep learning with PyTorch workshop — 2022

**McGill NeuroTech**
Machine Learning Developer — 2021 – 2022

**McGill Robotics**
Software Developer — 2020 – 2021

## Languages

**Native:** English, French
**Advanced:** Italian, Spanish
**Beginner:** Mandarin, Japanese

## Skills

**Programming Languages:** Python, Java, JavaScript, R, C, C++, C#, OCaml, SQL, HTML, CSS

**Machine Learning Libraries:** PyTorch, TensorFlow, Keras, Pandas, NumPy

**Other:** LaTeX, Slurm, Jupyter Notebooks, Perforce, GitHub, Jira, Unity

## Press

**SciLogs**. Nina Beier. Jan 24, 2024. What Do Food and Research Have in Common? More Than You Might Think.

**The McGill Tribune**. Mikaela Shadick. March 15, 2022. Six McGill undergrads win UofT international artificial intelligence competition.

**McGill Reporter**. Richard Deschamps. March 1, 2022. Undergrad team uses machine learning to create a better hospital ventilator.

## Advanced Coursework

**Université de Montréal**
Representation Learning
Reinforcement Learning & Optimal Control
Scaling Laws
Causal Inference & Machine Learning
Probabilistic Graphical Models

**McGill University**
Reinforcement Learning
Brain Inspired Artificial Intelligence
Honours Math for Machine Learning
Probabilistic Programming
Network Science

**National University of Singapore**
Quantum Computing
Information Theory