Thomas Jiralerspong

[Academic CV](https://superkaiba.github.io/assets/pdf/academic-cv.pdf) - [Website](https://superkaiba.github.io/) - [Google Scholar](https://scholar.google.ca/citations?user=ifQsJnIAAAAJ&hl=en) - [GitHub](https://github.com/superkaiba) - [LinkedIn](https://www.linkedin.com/in/thomas-jiralerspong/) - [thomasjiralerspong@gmail.com](mailto:thomasjiralerspong@gmail.com) - (514) 625-9308

# Education

## University of Montreal/Mila – Co-supervised by Prof. Yoshua Bengio & Prof. Doina Precup

Master’s of Science – Computer Science (Thesis) Sep 2023 – Present

**Awards:** NSERC Canada Graduate Scholarship (17 500$), University of Montreal Discovery Master’s Recruitment Scholarship (5 000$)

## McGill University

Bachelor of Science – Honours Computer Science – 4.00/4.00 GPA, First Class Honours, Dean’s Honour List Sep 2020 – Apr 2023

**Awards:** J. W. McConnell Major Entrance Scholarship (9 000$), McGill Mobility Bursary for Exchanges (6 000$)

**Exchange semester at the National University of Singapore**

# Research Experience

## Waabi *PyTorch, Python*

Research Intern – Toronto, Ontario Jun 2023 – Aug 2023

**Project:** Realistic and controllable probabilistic traffic simulation using a transformer based variational autoencoder

## Mila/McGill University – Supervised by Prof. Blake Richards *PyTorch, Python*

Undergraduate Researcher – Montreal, Quebec Sep 2022 – Aug 2023

**Project:** Contrastive learning to discover important states for reinforcement learning in sparse reward environments

## Mila/McGill University – Supervised by Prof. Doina Precup *TensorFlow, Python*

Undergraduate Researcher – Montreal, Quebec Jan 2022 – Aug 2023

**Project:** Model-based reinforcement learning with affordance aware tree-search planning directly from pixels

## Vector Institute for Artificial Intelligence *Python*

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

**Project:** Model-based reinforcement learning for HVAC control

## Project X – Machine Learning Research Competition *PyTorch, Python*

Co-Leader of McGill’s Team, received highest score out of 25 submitted papers Jun 2021 – Feb 2022

**Project:** Deep offline conservative reinforcement learning for mechanical ventilation treatment

# Publications

[**Contrastive Retrospection: honing in on critical steps for rapid learning and generalization in RL**](https://arxiv.org/pdf/2210.05845.pdf)

C. Sun, W. Yang, **T. Jiralerspong**, D. Malenfant, B. Alsbury-Nealy, Y. Bengio, B. Richards (Accepted) NeurIPS 2023

[**Forecaster: Towards Temporally Abstract Tree-Search Planning from Pixels**](https://arxiv.org/pdf/2310.09997.pdf)

**T. Jiralerspong\***, F. Kondrup\*, D. Precup, K. Khetarpal (Accepted) NeurIPS 2023 GenPlan Workshop

[**Towards Safe Mechanical Ventilation Treatment Using Deep Offline Reinforcement Learning**](https://arxiv.org/pdf/2210.02552.pdf)

F. Kondrup\*, **T. Jiralerspong\***, E. Lau\*, N. de Lara, J. Shkrob, M.D. Tran, D. Precup, S. Basu. AAAI 2023

[**A Comparison of Classical and Deep Reinforcement Learning Methods for HVAC Control**](https://browse.arxiv.org/pdf/2308.05711.pdf)

M. Wang, J. Willes, **T. Jiralerspong**, M. Moezzi UIC 2023

[**Deep Conservative Reinforcement Learning for Personalization of Mechanical Ventilation Treatment**](https://rldm.org/wp-content/uploads/2022/06/RLDM2022_cameraready.pdf)

F. Kondrup\*, **T. Jiralerspong\***, E. Lau\*, N. de Lara, J. Shkrob, M.D. Tran, D. Precup, S. Basu RLDM 2022

[**Network Analysis of the iNaturalist Citizen Science Community**](https://arxiv.org/pdf/2310.10693.pdf)

Y. Liu\* & **T. Jiralerspong\*** Preprint 2022

[**Modelling the Evolution of Arctic Sea Ice Extent**](https://superkaiba.github.io/assets/pdf/arctic-sea-ice.pdf)

X. Fan\*, **T. Jiralerspong\***, K. Zhu\*, B. Nasri, C. Genest Preprint 2020

\*Equal Contribution

# Software Development Experience

Amazon Web Services (AWS) – S3 Team Python, JavaScript

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

Square Enix C#

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

Expedia Group JavaScript, TypeScript, React

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

# Projects

## [Rainbow Q-Learning in Jelly-Bean World](https://drive.google.com/file/d/1LR2fIoE3VrYsE6R4CvDp9SqJ1bCVUQoH/view) 2022 [Generating Music Using a LSTM Network with Attention](https://github.com/superkaiba/generate-music) 2020