

Thomas Jiralerspong

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Education

Université de Montréal

M.Sc., Computer Science

(Expected) 2025

Supervisors: [Yoshua Bengio](#) & [Doina Precup](#)

McGill University

B.Sc., Honours Computer Science

2023

GPA: 4.00/4.00

Supervisors: [Blake Richards](#) & [Doina Precup](#)

Exchange semester at the National University of Singapore

Refereed Conferences

Jean-Pierre Falet, Hae Beom Lee, Nikolay Malkin, Chen Sun, Dragos Secrieru, **Thomas Jiralerspong**, Dinghuai Zhang, Guillaume Lajoie, Yoshua Bengio. “Delta-AI: Local Objectives for Amortized Inference in Sparse Graphical Models” In *Twelfth International Conference on Learning Representations (ICLR)*. 2024.

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.

* Equal Contribution

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. arXiv preprint arXiv:2402.01207.

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

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| 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 |
| | Student Representative on Recruitment Committee | 2023 – Present |
| | Student Representative on Social Committee | 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, Matplotlib

Other: L^AT_EX, 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