

# THOMAS JIRALERSPONG

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**Citizenships:** Canadian and Italian (European Union)

## EDUCATION

### Université de Montréal/Mila

PhD – Computer Science – Co-supervised by **Prof. Yoshua Bengio** & **Prof. Doina Precup** Sep 2023 – May 2027 (Expected)

- **Awards:** FRQNT Scholarship (40 000\$) (Rank #1), NSERC Canada Graduate Scholarship (17 500\$)

### Massachusetts Institute of Technology (MIT)

Brains, Minds & Machines Summer Course

2024

### McGill University

B.Sc. – Honours Computer Science – GPA:4.00/4.00 – Supervised by **Prof. Blake Richards**

Sep 2020 – May 2023

## INDUSTRY RESEARCH EXPERIENCE

### Occam AI

Research Intern - New York City, United States

PyTorch, Python

Jun 2024 –Present

- **Project:** Automated SQL query generation using LLMs

### Waabi

Deep Learning Research Intern - Toronto, Canada

PyTorch, Python

Jun 2023 – Sep 2023

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

### Vector Institute for A.I.

Machine Learning Research Intern – Toronto, Canada

PyTorch, Python

Sep 2022 – Dec 2022

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

## SOFTWARE DEVELOPMENT EXPERIENCE

### Amazon Web Services (AWS) – S3 Team

Software Development Engineer Intern – Vancouver, Canada

Python, JavaScript

May 2022 – Jul 2022

### Expedia Group

Software Development Engineer Intern – Montreal, Canada

JavaScript, TypeScript, React

Jun 2019 – Aug 2019

## SELECTED PUBLICATIONS

### [Towards A Formal Theory of Compositionality](#)

(Submitted)

E. Elmoznino\*, **T. Jiralerspong\***, Y. Bengio, G. Lajoie.

**ICLR 2025**

### [Geometric Signatures of Compositionality Across a Language Model's Lifetime](#)

(Submitted)

J. Lee\*, **T. Jiralerspong\***, L. Yu, Y. Bengio, E. Cheng.

**ICLR 2025**

### [Expressivity of Neural Networks with Random Weights and Learned Biases](#)

(Submitted)

E. Williams, A. Ryoo\*, **T. Jiralerspong\***, A. Payeur, M. Perich, L. Mazzucatto, G. Lajoie.

**ICLR 2025**

### [Efficient Causal Graph Discovery Using Large Language Models](#)

**T. Jiralerspong\***, X. Chen\*, Y. More, V. Shah, Y. Bengio

**ICLR Workshop 2024**

### [Contrastive Retrospection: honing in on critical steps for rapid learning and generalization in RL](#)

C. Sun, W. Yang, **T. Jiralerspong\***, D. Malenfant, B. Alsbury-Nealy, Y. Bengio, B. Richards.

**NeurIPS 2023**

### [Forecaster: Towards Temporally Abstract Tree-Search Planning from Pixels](#)

**T. Jiralerspong\***, F. Kondrup\*, D. Precup, K. Khetarpal.

**NeurIPS Workshop 2023**

### [Towards Safe Mechanical Ventilation Treatment Using Deep Offline Reinforcement Learning](#)

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

**AAAI 2023**

\*Equal Contribution

## AWARDS & ACHIEVEMENTS

Chosen as one of the 200 most promising young researchers in math & CS by the **Heidelberg Laureate Forum**

2023

Winner of **Project X 2021** (25 000\$)

2021