

THOMAS JIRALERSPONG

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EDUCATION

Université de Montréal/Mila

PhD – Computer Science – Co-supervised by **Prof. Yoshua Bengio** & **Prof. Doina Precup** Sep 2023 – Present

- **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 multi-agent 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

A Formal Theory of Compositionality

E. Elmoznino*, **T. Jiralerspong***, Y. Bengio, G. Lajoie. (Submitted) **ICLR 2025**

Geometric Signatures of Compositionality Across a Language Model's Lifetime

J. Lee*, **T. Jiralerspong***, L. Yu, Y. Bengio, E. Cheng. (Submitted) **ICLR 2025**

Expressivity of Neural Networks with Random Weights and Learned Biases

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