THOMAS JIRALERSPONG

+1 514 625 9308 | thomasjiralerspong@gmail.com | LinkedIn | GitHub | Website | Google Scholar

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 2028 (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 PyTorch, Python
Research Intern - New York City, United States *Jun 2024 –Present*
- **Project:** Automated SQL query generation for multi-agent LLMs

Waabi PyTorch, Python
Deep Learning Research Intern - Toronto, Canada *Jun 2023 – Sep 2023*
- **Project:** Realistic and controllable traffic simulation using a transformer based variational autoencoder

Vector Institute for A.I. PyTorch, Python
Machine Learning Research Intern – Toronto, Canada *Sep 2022 – Dec 2022*
- **Project:** Model-based reinforcement learning for HVAC control

SOFTWARE DEVELOPMENT EXPERIENCE

Amazon Web Services (AWS) – S3 Team Python, JavaScript
Software Development Engineer Intern – Vancouver, Canada *May 2022 – Jul 2022*

Expedia Group JavaScript, TypeScript, React
Software Development Engineer Intern – Montreal, Canada *Jun 2019 – Aug 2019*

SELECTED PUBLICATIONS

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