TIANYU LI

1557 Rue Dufresnes, Montreal, QC, H2K3J6
(+1) 514-2172043 ⋄ tianyu.li@mail.mcgill.ca

RESEARCH INTERESTS

Sequence Modeling, Reinforcement Learning, Large Language Models, State Space Models, Multi-linear Algebra

EDUCATION

McGill University/Quebec AI Institute (MILA), Canada *September 2017 - May 2023*
Ph.D. in Computer Science
Thesis: Towards Efficient State Representations for Sequential Modelling with State Space Models
Advisors: Doina Precup, Guillaume Rabusseau **GPA: 4.0/4.0**

McGill University, Canada *September 2015 - June 2017*
Master in Computer Science
Thesis: A Neural Network Based Nonlinear Weighted Finite Automata
Advisor: Doina Precup **GPA: 3.77/4.0**

Xiamen University, China *September 2010 - June 2014*
Bachelor in Computer Science
Minor in Statistics
Advisor: Zhonggui Chen **GPA: 3.7/4.0**

WORKING EXPERIENCE

Senior Research Scientist @ Samsung AI Center Montreal *June, 2023 - Present*
Supervisors: Gregory Dudek, Steve Liu, Di Wu
Research topic: Hallucinations in large language models

Research Intern @ Samsung AI Center Montreal *April, 2021 - January, 2022*
Supervisor: Di Wu
Research topic: Reinforcement learning for 5G telecommunication

Research Intern @ Microsoft Research Montreal *January, 2021 - April, 2021*
Supervisors: Kaheer Suleman, Goeff Gordon
Research topic: Microsoft Office Online user behaviors collection and modeling via imitation learning

PUBLICATIONS

Bogdan Mazoure*, Thang Doan*, **Tianyu Li**, Vladimir Makarenkov, Joelle Pineau, Doina Precup, Guillaume Rabusseau
Low-Rank Representation of Reinforcement Learning Policies
In *Journal of Artificial Intelligence Research, 2022*

Jimmy Li, Di Wu, Yitian Xu, **Tianyu Li**, Seowoo Jang, Xue Liu, and Gregory Dudek
Traffic Scenario Clustering and Load Balancing with Distilled Reinforcement Learning Policies
In *IEEE International Conference on Communications (ICC), 2022*

* Equal Contribution

Tianyu Li, Bogdan Mazoure, and Guillaume Rabusseau
Sequential Density Estimation via Nonlinear Continuous Weighted Finite Automata
In *LearnAut Workshop at The 49th EATCS International Colloquium on Automata, Languages and Programming (ICALP), 2022*

Tianyu Li, Doina Precup, and Guillaume Rabusseau
Connecting Weighted Automata, Tensor Networks and Recurrent Neural Networks through Spectral Learning
In *Machine Learning Journal, 2022*

Di Wu*, **Tianyu Li***, David Meger, Michael Jenkin, Steve Liu, and Gregory Dudek
MBAIL: Multi-Batch Best Action Imitation Learning utilizing Sample Transfer and Policy Distillation
In *Offline Reinforcement Learning Workshop at The 35th Conference on Neural Information Processing Systems (Neurips), 2021*

Tianyu Li*, Bogdan Mazoure*, Doina Precup, and Guillaume Rabusseau
Efficient Planning under Partial Observability with Unnormalized Q Functions and Spectral Learning
In *The 23rd International Conference on Artificial Intelligence and Statistics (AISTATs), 2020*

Guillaume Rabusseau, **Tianyu Li**, and Doina Precup
Connecting Weighted Automata and Recurrent Neural Networks through Spectral Learning
In *The 22nd International Conference on Artificial Intelligence and Statistics (AISTATs), 2019*

Tianyu Li, Guillaume Rabusseau, and Doina Precup
Nonlinear Weighted Finite Automata
In *The 21st International Conference on Artificial Intelligence and Statistics (AISTATs), 2018*

Tianyu Li, Guillaume Rabusseau, and Doina Precup
Neural Network based Nonlinear Weighted Finite Automata
In *ACM/IEEE Symposium on Logic in Computer Science (LICS)* workshop on Learning and Automata, 2017

TECHNICAL REPORTS

Junliang Luo, **Tianyu Li**, Di Wu, Michael Jenkin, Steve Liu, Gregory Dudek
Hallucination Detection and Mitigation: an Investigation *December, 2023*

TEACHING EXPERIENCE

Teaching Assistant @ African Institute for Mathematical Sciences (AIMS):
Matrix Factorization and Tensor Methods *May, 2020*

Teaching Assistant @ McGill:

COMP 189 Computers and Society	COMP 202 Foundations of Programming
COMP 360 Algorithm Design	COMP 424 Artificial Intelligence
COMP 551 Applied Machine Learning	COMP 652 Machine Learning

COMMUNITY SERVICE

Program Committee:
The 16th International Conference on Grammatical Inference (ICGI) *July 2023*

Conference Reviewer:
Neurips, ICLR, AISTATs, ICML, etc.

* Equal Contribution

Graduate Student Admission Committee:
MILA Quebec AI Institute *December 2020 and December, 2022*

SKILLS

Programming languages:

- Extensive experience with: Python, PyTorch, LATEX, and JavaScript;
- Moderate experience with: TensorFlow, R, Java, C++, and Matlab;

Languages: English, Mandarin
Hobbies: Cooking, Kickboxing