







ADAMO YOUNG

Deep Learning for Life Sciences

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SUMMARY

I am a Computer Science PhD student at the University of Toronto. I specialize in adapting deep learning techniques to tackle interesting problems in the life sciences. My current research focuses on improving analysis of mass spectrometry data for small molecules.

SKILLS

Languages: Python, C, Java, SQL

Technologies: Python Deep Learning Stack (Pytorch, JAX, W&B, Pytorch Lightning)
Python Data Science Stack (Numpy, Pandas, Matplotlib)
Large-Scale Data Processing Frameworks (Spark)

EDUCATION

09/2020 - present	PhD Computer Science	University of Toronto
	<ul style="list-style-type: none">• 4.00/4.00 cGPA• Supervised by Hannes Röst and Bo Wang• Thesis: Deep Learning Applications in Mass Spectrometry for Small Molecules (expected graduation: 06/2025)• Relevant Coursework: Neural Network Training Dynamics, Convex Optimization, Minimizing Expectations	
09/2018 - 06/2020	MSc Computer Science	University of Toronto
	<ul style="list-style-type: none">• 4.00/4.00 cGPA• Supervised by Quaid Morris and Hannes Röst• Thesis: Optimal Division of the Genome into Regions with Cancer Type Specific Differences in Mutation Rates• Relevant Coursework: Information Theory, Monte Carlo Methods, Machine Learning for Health, Applied Stochastic Processes, Learning to Search	
09/2014 - 06/2018	BSc Computer Science	University of Toronto
	<ul style="list-style-type: none">• 3.92/4.00 cGPA• Specialist Program in Computer Science	

FIRST AUTHOR PUBLICATIONS

04/2024	FraGNNNet: A Deep Probabilistic Model for Mass Spectrum Prediction preprint
	Adamo Young , Fei Wang, David Wishart, Bo Wang, Hannes Röst, Russ Greiner.
04/2024	MassFormer: Tandem Mass Spectrum Prediction with Graph Transformers paper , code
	Adamo Young , Bo Wang, Hannes Röst. Published in Nature Machine Intelligence.
12/2019	Genome Gerrymandering: Optimal Division of the Genome into Regions with Cancer Type Specific Differences in Mutation Rates paper , code
	Adamo Young , Jacob Chmura, Yoonsik Park, Quaid Morris, Gurnit Atwal. Published in Proceedings of the Pacific Symposium on Biocomputing.

OTHER PUBLICATIONS

08/2023	Unleashing the Strengths of Unlabeled Data in Pan-cancer Abdominal Organ Quantification: the FLARE22 Challenge paper
	Jun Ma <i>et al.</i> (28 other authors, including Adamo Young). Preprint.
06/2022	A graph neural network approach for molecule carcinogenicity prediction paper , code
	Philip Fradkin, Adamo Young , Lazar Atanackovic, Brendan Frey, Leo J Lee, Bo Wang. Published in Bioinformatics.
10/2022	SELFIES and the future of molecular string representations paper
	Mario Krenn <i>et al.</i> (30 other authors, including Adamo Young). Published in Patterns.
08/2021	Analyzing Assay Specificity in Metabolomics Using Unique Ion Signature Simulations paper
	Premy Shanthamoorthy, Adamo Young , and Hannes Röst. Published in Analytical Chemistry.

07/2021	Actin-Related Protein 6 (ARP6) influences double-strand break repair in yeast paper Mohsen Hooshyar <i>et al.</i> (17 other authors, including Adamo Young). Published in Applied Microbiology.
05/2021	Supervised topic modeling for predicting molecular substructure from mass spectrometry paper Gabriel K. Reder, Adamo Young , Jaan Altosaar, Jakub Rajniak, Noémie Elhadad, Michael Fischbach, Susan Holmes. Published in F1000 Research.
11/2020	Machine Learning in Mass Spectrometric Analysis of DIA Data paper Leon Xu, Adamo Young , Audrina Zhou, Hannes Röst. Published in Proteomics.

WORK EXPERIENCE

06/2024 - 08/2024	Machine Learning Research Intern Autodesk <ul style="list-style-type: none"> Exploring Monte Carlo Tree Search (MCTS) as a tool for planning in maximum entropy RL and generative flow networks.
07/2023 - 09/2023	Applied Scientist Intern Amazon <ul style="list-style-type: none"> Created a novel graph-structured dataset based on consumer purchase activity using Spark Implemented and trained a Graph Neural Network (GNN) model on this data to learn useful product embeddings for downstream recommendation tasks
05/2020 - 08/2020	Machine Learning Research Intern Autodesk <ul style="list-style-type: none"> Supervised by Kaveh Hassani Developed an autoregressive generative model for multi-relational graphs, based on Graph Recurrent Attention Network (GRAN)

OTHER PROJECTS

05/2017 - 05/2018	Learning RNA Binding Protein Motifs with Convolutional Neural Networks <ul style="list-style-type: none"> Developed a convolutional neural network model (based on DeepBind) that combines simulated secondary structure information with primary sequence to predict RNA binding protein affinities Presented as a poster at the 2017 Cold Spring Harbor Laboratory Conference on Genome Informatics
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LEADERSHIP

2022 - present	Co-Organizer of Toronto GAAP website <ul style="list-style-type: none"> Helped coordinate the Toronto Graduate Application Assistance Program (GAAP), a student-run effort to provide new graduate school applicants at the University of Toronto Department of Computer Science with feedback on their applications.
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AWARDS

2021	NSERC Postgraduate Scholarship: Doctoral NSERC
2020	Ontario Graduate Scholarship: Doctoral OSAP
2018 - 2019	Ontario Graduate Scholarship: Master's OSAP
2019	Cecil Yip Research Award University of Toronto
2018	Vector Scholarship in Artificial Intelligence Vector Institute
2015 - 2018	Dean's List Scholar University of Toronto
2016	Molecular Genetics Summer Undergraduate Research Opportunity Program University of Toronto
2015	NSERC Summer Undergraduate Student Research Award NSERC