Harley Wiltzer

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Education

2022 – Present **Mila / McGill University** – Montreal, Canada
Ph.D in Computer Science
Supervisors: Marc G. Bellemare and David Meger
GPA: 4.0/4.0

2019 – 2021 **McGill University / Mila** – Montreal, Canada
M.Sc in Computer Science
Supervisors: David Meger and Marc G. Bellemare
Dissertation: *On the Evolution of Return Distributions in Continuous-Time Reinforcement Learning*
GPA: 4.0/4.0

2015 – 2018 **McGill University** – Montreal, Canada
B.Eng in Computer Engineering
Capstone Advisor: Shane McIntosh
GPA: 3.96/4.0

Publications

2024 **Action Gaps and Advantages in Continuous-Time Distributional Reinforcement Learning**
Harley Wiltzer*, Marc G. Bellemare, David Meger, Patrick Shafto, Yash Jhaveri*
Advances in Neural Information Processing Systems (NeurIPS)

2024 **Foundations of Multivariate Distributional Reinforcement Learning**
Harley Wiltzer, Jesse Farebrother, Arthur Gretton, Mark Rowland
Advances in Neural Information Processing Systems (NeurIPS)

2024 **Simplifying Constraint Inference with Inverse Reinforcement Learning**
Adriana Hugessen, Harley Wiltzer, Glen Berseth
Advances in Neural Information Processing Systems (NeurIPS)
Reinforcement Learning Safety Workshop @ RLC

2024 **A Distributional Analogue to the Successor Representation**
Harley Wiltzer*, Jesse Farebrother*, Arthur Gretton, Yunhao Tang, André Barreto, Will Dabney, Marc G. Bellemare, Mark Rowland
International Conference on Machine Learning (ICML) (Spotlight, top 3.5%)
European Workshop on Reinforcement Learning (EWRL)

2023 **Policy Optimization in a Noisy Neighborhood: On Return Landscapes in Continuous Control**
Nate Rahn*, Pierluca D'Oro*, Harley Wiltzer, Pierre-Luc Bacon, Marc G. Bellemare
Advances in Neural Information Processing Systems (NeurIPS)

2022 **Distributional Hamilton-Jacobi-Bellman Equations for Continuous-Time Reinforcement Learning**
Harley Wiltzer, David Meger, Marc G. Bellemare
International Conference on Machine Learning (ICML) *(Spotlight)*

Preprints

2024 **Revisiting Successor Features for Inverse Reinforcement Learning**
Arnav Kumar Jain, Harley Wiltzer, Jesse Farebrother, Irina Rish, Glen Berseth, Sanjiban Choudhury
Models of Human Feedback for AI Alignment Workshop (MHFAIA) @ ICML

Industry Experience

2023 **Microsoft Research**, *Research Intern*   New York, USA
Division: *Real-World Reinforcement Learning*
Responsibilities: *Developed methods for 3D scene reconstruction from noisy monocular camera sensors, and geometric latent state planning.*

2019 **Amazon Web Services**, *Software Development Engineer Intern*   Vancouver, Canada
Division: *AWS Auto Scaling*
Responsibilities: *Designed a service for AWS Auto Scaling that monitors the health of the server fleets hosting thousands of AWS services in each AWS region. Invented and implemented machine learning models and signal processing algorithms to detect anomalies in Auto Scaling's regional time series data.*

2018 **Amazon**, *Software Development Engineer Intern*   Vancouver, Canada
Division: *Amazon Wallet*
Responsibilities: *Designed and implemented a state of the art system for optimizing the resolution of BIN-derived payment properties without access to security-critical credit card data. Developed this system and extensive automated tests singlehandedly.*

2017 **Micro Focus**, *QA Engineer Intern*   Montreal, Canada
Division: *Micro Focus Retain*
Responsibilities: *Scrum Master for a core development team working on the Retain unified archiving system. Designed and carried out tests for the Retain Unified Archiving software, identified several security vulnerabilities that had gone unnoticed for 3 or more years.*

Talks

2024 **Mobile Robotics Mega Meeting** (Slides)   McGill University, Montreal, Canada

2023 **Risk-Aware RL Workshop** (Slides)   Université de Montréal, Montreal, Canada

2023 **RL Theory Workshop** (Recording)   University of Alberta, Edmonton, Canada

Honors and Scholarships

2023 **Doctoral Research Scholarship**, *Fonds de recherche du Québec (FRQNT)*

2023 **Postgraduate Scholarship—Doctoral**, *NSERC*

2020 **Alexander Graham Bell Scholarship**, *NSERC*

2019 **British Association Medal**, *McGill University*

2018 **Peter P. Sebestyen Award**, *McGill University*

2017 **W. G. McBride Scholarship**, *McGill University*

2016 **Brian Cullen Award**, *McGill University*

2016 **Douglas Macaulay Scholarship**, *McGill University*

2015 **J. W. McConnell Scholarship**, *McGill University*

Service

I served as a reviewer for the following conferences and journals:

2024 ICLR, ICML (**Best Reviewer Award**), ICRA, JMLR, NeurIPS (**Reviewer Award**), RLC, TMLR

2023 AISTATS, Artificial Intelligence Journal, CoLLAs, ICLR, ICML, JMLR, NeurIPS (**Reviewer Award**)

2022 ICML, NeurIPS (**Reviewer Award**)

Teaching Experience

2022 **Teaching Assistant**, *McGill University School of Computer Science*   Montreal, Canada
Course: `COMP579`, *Reinforcement Learning*
Responsibilities: *Graded exams an assignments, held office hours, and led tutorial sessions.*

2022 **Teaching Assistant**, *Polytechnique Montréal*   Montreal, Canada
Course: `INF8250e`, *Reinforcement Learning*
Responsibilities: *Graded exams and assignments, held office hours, and designed the assignment on Deep RL for continuous control with PyTorch.*

2022 **Teaching Assistant**, *McGill University School of Computer Science*   Montreal, Canada
Course: `COMP551`, *Applied Machine Learning*
Responsibilities: *Graded exams and assignments, held office hours, and led tutorial sessions.*

2021 **Teaching Assistant**, *McGill University School of Computer Science*   Montreal, Canada
Course: `COMP551`, *Applied Machine Learning*
Responsibilities: *Graded assignments and exams, held office hours, gave tutorials, and helped design the final course project.*

Contributions to Open Source

2021 – Present	**JuliaReinforcementLearning**	https://juliareinforcementlearning.org

Contributions: *Implementation of algorithms and library methods, bug fixes, and documentation.*

2020 – 2021	**JAX**	https://github.com/google/jax

Contributions: *Identified a number of bugs that cause memory leaks, JIT cache misses, and inconsistent JIT behavior.*

2021	**Nixpkgs**	https://github.com/NixOS/nixpkgs

Contributions: *Implemented "derivations" for the Nix package manager to provide the* `dm_haiku` *Python package, as well as related packages in the JAX ecosystem.*

2020 – Present	**K-9 Mail**	https://github.com/DestructiveReasoning/k-9

Contributions: *Implemented support for XOAUTH2 authentication for Office365 email accounts.*

2019	**SageRank**	https://github.com/harwiltz/SageRank

Contributions: *Designed and implemented a system for managing a library of research papers, as well as a helpful paper recommendation engine.*

2018 – Present	**Gentoo Linux**	https://github.com/harwiltz/gentoo

Contributions: *Maintenance of a collection of software packages that are not officially supported by the Gentoo Linux distribution, including packages that support the AMD ROCm drivers for relatively old GPUs.*

Technical Skills

Programming Languages
Python, Julia, Scala, Java, Haskell, Ruby, GNU Octave, C, C++, Rust, Javascript, BASH, LaTeX

ML Libraries
JAX, PyTorch, Flux.jl, ReinforcementLearning.jl

Misc. Software
git, Amazon EC2, Amazon S3, AWS DynamoDB, AWS Lambda, Google Compute Engine, FireBase, Nix, Docker, GNU/Linux

Portfolio
https://github.com/harwiltz, https://github.com/DestructiveReasoning

Languages

English *Fluent*

French *Competent*