Harley Wiltzer

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Research Interests

(Distributional) reinforcement learning, optimal control, risk-sensitive control, representation learning, probabilistic models

Education

2021 – Present **McGill University / Mila** – Montreal, Quebec
Ph.D in Computer Science
Supervisors: David Meger and Marc G. Bellemare
GPA: 4.0/4.0

2019 – 2021 **McGill University / Mila** – Montreal, Quebec
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, Quebec
B.Eng in Computer Engineering
Capstone Advisor: Shane McIntosh
GPA: 3.96/4.0

Honors and Scholarships

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*

Publications

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

Industry Experience

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.*

Teaching Experience

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*