# PATRICK NADEEM WARD

Montreal, Quebec, Canada

website: nadeemward.github.io — email: wardnade@mila.quebec — +1 (514) 586-4655

## EDUCATION

**M.Sc.** McGill University                                   *Sept 2018 - (Expected) Winter 2020*
Computer Science

- Cumulative GPA 4.0/4.0 — Advisor: Prof. Precup
- *Graduate Research Award (2018)* to pursue a Master's in Computer Science at McGill.

**B.A.** McGill University                                              *Sept 2015 - April 2018*
Double major Mathematics and Software Engineering

- Cumulative GPA 3.6/4.0
- *Distinction Award* for being in the top 25% of the graduating class.

## PUBLICATION

**P.N. Ward**, A. Smofsky, A. J. Bose (2019) *"Improving Exploration in Soft-Actor-Critic with Normalizing Flows Policies"* Invertible Neural Networks and Normalizing Flows Workshop ICML 2019.

## EXPERIENCE

**Research Assistant** Mila and McGill University                        *June 2018 - Present*

- Explored the use of new stochastic policies for continuous control tasks in Reinforcement Learning; implementing a recent advancement in Variational Inference called **Normalizing Flows** to model more expressive policy distributions which resulted in the above Workshop publication.
- Conducted a survey on the tradeoffs of 3 Temporal Differencing (TD) methods in the tabular setting to better understand the sample complexity required in Reinforcement Learning.
- Co-Implementing a pipeline to train and tune models for Options in generic Multi-Agent settings using High Performance Computing (HPC).

**Teaching Assistant** McGill University                              *Sept 2018 - June 2019*
Intro to Reinforcement Learning, Applied Machine Learning and Real Analysis

- Hosted tutorials and held office hours to help students understand various topics in (1) Reinforcement Learning, (2) Machine Learning, and (3) Real Analysis.

**Data Scientist Intern** Société Générale                            *May 2017 - Sept 2017*

- Developed proof of concepts to solve problems in banking and administration using machine learning techniques in Python:
  - Used Random Forests and various time-series models to predict potential server crashes.
  - Used word and sentence embeddings to create a distance metric to flag legal documents that vary from acceptable standards and created a UI using Flask.
- Promoted the use of M.L./A.I. in the workplace and their possible applications to other areas in the Bank.

## TECHNICAL SKILLS

- Programming Languages and tools: Python (3 years); Java (2 years); R, SQL, MATLAB, JavaScript, C, Hadoop, Git (1 year), HPC, Bash.

## SELECTED COURSE WORK

- **Applied:** Stochastic Processing — Time-Series — Reinforcement Learning — Natural Language Processing — Probabilistic Graphical Models

- **Theory:** Mathematical foundations of Machine Learning — Theoretical Principals of Deep Learning — Algorithmic Game Theory

## ADDITIONAL INFORMATION

- Fluent in English, French and Arabic.

- US citizen