## Maxime Wabartha

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maxwab.github.io


**RESEARCH INTERESTS**

I focus on the theoretical aspects of learning representations for reinforcement learning. I am currently interested in representations that lead to interpretable algorithms, especially when used with (non-linear) function approximation.

**EDUCATION**

**PhD** in Computer Science, McGill University (Canada), 2019 - to date
*Reinforcement learning, advised by Prof. Joelle Pineau*

**MSc** in Applied Mathematics, Université Paris-Saclay (France), 2017-2018
Master "Mathématiques, Vision, Apprentissage" (MVA). Topic: *Learning diverse neural networks for improved exploration in deep reinforcement learning*

**BS, MEng**, École Centrale de Lille (France), 2010-2017

**EXPERIENCE**

**Research intern**, McGill University (Canada), May 2018 - Dec. 2018
Topic: *Exploration in deep reinforcement learning* [4]

**Research intern**, Polytechnique Montréal (Canada), May 2017 - Sep. 2017
Topic: *Semantic segmentation of the spinal cord* [5]

**Business intelligence analyst**, Shopwings (Australia), Jun. 2016 - Sep. 2016
*Startup. Developing data analysis tools, project manager.*

**Junior financial auditor**, Ernst&Young (France) Sep 2015 - Mar. 2016
*Financial audit of industrial french companies.*

**Internal vice-president**, Centrale Lille Projets (France). Apr. 2014 - Mar. 2015
*Student-led consulting company (100k€ turn-over).*
*In charge of HR, project manager for 5 projects (∼15k€).*

***References available upon request***

**PUBLICATIONS**


[1] **Wabartha, M.**, Durand, A., Francois-Lavet, V., & Pineau, J. (2020). *Handling Black Swan Events in Deep Learning with Diversely Extrapolated Neural Networks.* International Joint Conference on Artificial Intelligence, 2140-2147.

[2] Mangeat, G., Ouellette, R., **Wabartha, M.**, De Leener, B., Plattén, M., Danylaité Karrenbauer, V., ... & Granberg, T. (2020). *Machine Learning and Multiparametric Brain MRI to Differentiate Hereditary Diffuse Leukodystrophy with Spheroids from Multiple Sclerosis.* Journal of Neuroimaging.

[3] **Wabartha, M.**, Durand, A., François-Lavet, V., & Pineau, J. (2019). *Handling Black Swan Events in Deep Learning with Diversely Extrapolated Neural Networks.* NeurIPS Workshop on Safety and Robustness in Decision Making.

[4] **Wabartha, M.**, Durand, A., François-Lavet, V., & Pineau, J. (2018). *Sampling diverse neural networks for exploration in reinforcement learning.* NeurIPS Workshop on Bayesian Deep Learning.

[5] Zaimi, A.*, **Wabartha, M.***, Herman, V., Antonsanti, P. L., Perone, C. S., & Cohen-Adad, J. (2018). *AxonDeepSeg: automatic axon and myelin segmentation from microscopy data using convolutional neural networks.* Nature Scientific reports, 8(1), 1-11.


* denotes an equal contribution.

**SKILLS**

Programming: Python, Pytorch, TensorFlow
Software/OS: Git, Unix, Slurm, LaTeX, Matlab
Math: experience with Markov chains, calculus, probability, linear algebra

**AWARDS**

FRQNT scholarship, doctoral program 2021-2023
*Fond de Recherche du Québec - Nature et Technologies.*
Competitive provincial scholarship, 25% acceptance.

**TALKS**

**Spotlight-like talk** [1], IJCAI (online) Jan. 2021
**Invited talk**, NeuroPoly lab (Canada), Jun. 2019
*Using diverse ensembles for out-of-distribution detection* [3]

**TEACHING**

**Teaching assistant**, McGill University (Canada) Jan. 2020 - Apr. 2020
*Artificial Intelligence (COMP424, 90h).*
*Office hours, tutorials, invigilating, grading.*

**SERVICE**

Reviewer for the Reproducibility Challenge (2019, 2020), Montreal AI Symposium (2020).

**LANGUAGES**

French (native), English (fluent), Italian (conversational), German (conversational).

**EXTRA-CURRICULAR**

Practice of competitive badminton, 10 years
Misc. interests: Cinema, History, Technology.