

# Antoine Moulin

PhD student in Reinforcement Learning



[antoine\\_mln](#)



[antoine-moulin](#)



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## Education

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**PhD in Machine Learning**, Universitat Pompeu Fabra. Barcelona, Spain. **12/21 – present**

The PhD project aims to identify and exploit structural properties of Markov decision processes that make large-scale reinforcement learning (RL) statistically and computationally feasible.

Research interests include online RL, offline RL, function approximation, representation learning.

Part of the ELLIS PhD program. Co-supervised by [Gergely Neu](#) (University Pompeu Fabra) and [Arthur Gretton](#) (University College London).

**Master of Science in Machine Learning**, ENS Paris-Saclay. Paris, France. **09/19 – 09/20**

Name of the degree: [Mathematics, Vision, Learning](#) (MVA). Grade: 17.34/20.00.

Coursework: RL, Computer Vision, Graphs in Machine Learning, Graphical Models, Optimization, Deep Learning (DL), Neurosciences, Kernel Methods, Sequential Learning, Multi-scale models, Biostatistics.

**Engineering Degree**, Telecom Paris. Paris, France. **09/17 – 09/20**

Equivalent to a Masters. Top 5% cohort. First student to pass 3 tracks (instead of 2). GPA: 4.00/4.00.

2<sup>nd</sup> year tracks: Applied Mathematics, Data Science & Image Processing.

**Preparatory Classes**, Lycée Janson-de-Sailly. Paris, France. **09/15 – 07/17**

Post-secondary two-year program in Advanced Mathematics and Physics. GPA: 3.96/4.00.

## Experience

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**Research Engineer**, INRIA. Lille, France. **02/21 – 04/21**

Kept working on the internship project, with more focus on TRPO and mirror descent algorithms.

**Research Intern**, INRIA. Lille, France. **05/20 – 10/20**

Research intern (6 months): implemented extensions of actor-critic methods (PPO, TRPO) to improve exploration, worked on reproducibility issues in RL.

**Research Intern**, Aalto University. Helsinki, Finland. **Summer 2019**

Reviewed the literature on canonical correlation analysis (CCA) methods and implemented an efficient extension of a sparse kernel CCA method.

**Analyst Intern**, Crédit Agricole. Caen, France. **Summer 2018**

**Communication Manager**, Junior-Entreprise. Paris, France. **2018 – 2019**

Organized workshops, study cases, visits and a gala for students & partner companies (budget: €27k). Managed missions in Machine Learning for several companies.

## Publications

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**Moulin, Antoine** and Neu, Gergely. Optimistic Planning by Regularized Dynamic Programming. In International Conference on Machine Learning, 2023.

# Academic Activities

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## Talks

- **Infinite horizon RL with linear function approximation**, Universitat Pompeu Fabra. Barcelona, Spain (03/23).
- **Primal-dual methods for RL**, Gatsby Unit, University College London. London, UK (09/22).
- **Introduction to JAX**, ELLIS Doctoral Symposium. Tübingen, Germany (09/21).
- **Virtual Sculpture**, 'Journée de l'Innovation' (finalist). Paris, France (06/18).

## Teaching

- **Introduction to Machine Learning** (Universitat Pompeu Fabra, 2022 – present).
- **Algorithm Design** (Universitat Pompeu Fabra, 2022 – present).
- **Computer Science** (IPESUP, bootcamp for high-school students, 2023).
- **Probabilities** (Universitat Pompeu Fabra, 2022).
- **Mathematics Examiner** (Janson-de-Sailly, preparatory classes, 2018 – 2019).

## Other

- Co-organizer of the RL summer school 2023 ([RLSS 2023](#)).
- Co-chair of the ELLIS RL reading group (2021 – 2022).
- Volunteer at AISTATS 2021.
- Reviewer at EWRL 2023.

## Skills

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**Programming** Python (PyTorch, JAX, TensorFlow), MATLAB, C++, Java, SQL.  
**Languages** French (native), English (fluent), Spanish, Italian (intermediate).

## Other Activities

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**Co-organizer of the beach volley tournament at DTIC, Universitat Pompeu Fabra (2022 – present).** Every edition gathers about 100 participants.

**Hobbies.** Climbing, (beach) volleyball, ski, tennis table.