Adrien Bolland

Postdoctoral Researcher

+32 479 96 96 77

https://adrienbolland.github.io/

adrien.bolland@uliege.be

About me

I am a postdoctoral researcher working on deep reinforcement learning with applications to the renewable-energy transition at the University of Liège. More specifically, my work focuses, on the one hand, on the study and development of exploration techniques in reinforcement learning algorithms and, on the other hand, on their application to control problems related to energy systems. I am open to collaborating on research projects and discussing career opportunities.

Work Experience

2020 – Present	Researcher (University of Liège) Doctoral researcher followed by a postdoctoral position since May 2025. Research interests : Reinforcement learning and energy system control.
2021 – 2023	*ClimActes* summer school Organization of a summer school program on the energy transition.
2019	Internship at Engie in the Market Modeling & Market View department (Engie Brussels) Internship in forecasting of the electricity-imbalance prices.
2019	Junior researcher at the Montefiore institute (University of Liège) Internship on RL solutions for trading on the intraday electricity market.
2017 – 2019	Student tutor (University of Liège) Tutoring in applied geometry, C-language, electromagnetic energy conversion, and computer structures.

Education

2024 – Present	Specialized M.Sc. in financial risk management (HEC Liège) Evening classes on risk management in finance.
2020 – 4/2025	Ph.D. in engineering sciences (University of Liège) *Advisor : Damien Ernst*. Manuscript available on ORBi
2018 – 2020	M.Sc. in electrical engineering in signal processing and intelligent robotics (University of Liège) Graduated with *Summa Cum Laude* – 91 %.
2015 – 2018	B.Sc. in electrical engineering and computer science (University of Liège) Graduated with *Magna Cum Laude* – 78 %.

Skills

Computer science	Deep learning, machine learning, reinforcement learning, optimization, and statistics.
Electrical engineering	System and control theory, power electronics, and energy markets.
Programming	Python, PyTorch, Scikit-Learn, Bash, Java, Matlab, C++ and C.
Finance	Financial and sustainable risk management, portfolio management, and financial derivatives.
Languages	French (Native), Dutch (C2), and English (C1).

Teaching Experience

Numerical optimization	Introductory course on conic programming and convex optimization algorithms.
Reinforcement learning	Course on dynamic programming, bandit theory, and reinforcement learning.
Energy markets	Introductory course on the organization of European energy markets.

Scientific Publications

Off-policy maximum entropy RL with future state and action visitation measures
Adrien Bolland, Gaspard Lambrechts, Damien Ernst
Preprint, 2025

Cost estimation in unit commitment problems using simulation-based inference
Matthias Pirlet, Adrien Bolland, Gilles Louppe, Damien Ernst
NeurIPS 2024 Workshop on Data-driven and Differentiable Simulations, Surrogates, and Solvers, 2024

Reinforcement learning for efficient design and control co-optimisation of energy systems
Marine Cauz, Adrien Bolland, Nicolas Wyrsch, Christophe Ballif
ICML 2024 AI for Science workshop, 2024

Informed POMDP : leveraging additional information in model-based RL
Gaspard Lambrechts, Adrien Bolland, Damien Ernst
Reinforcement Learning Conference (RLC), 2024

Behind the myth of exploration in policy gradients
Adrien Bolland, Gaspard Lambrechts, Damien Ernst
Preprint, 2024

Optimal control of renewable energy communities subject to network peak fees with model predictive control and reinforcement learning algorithms
Samy Aittahar, Adrien Bolland, Guillaume Derval, Damien Ernst
Preprint, 2024

Reinforcement Learning for joint design and control of battery-PV systems
Marine Cauz, Adrien Bolland, Bardhyl Miftari, Lionel Perret, Christophe Ballif, Nicolas Wyrsch
International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 2023

Policy gradient algorithms implicitly optimize by continuation
Adrien Bolland, Gilles Louppe, Damien Ernst
Transactions on Machine Learning Research, 2023

Distributional reinforcement learning with unconstrained monotonic neural networks
Thibaut Théate, Antoine Wehenkel, Adrien Bolland, Gilles Louppe, Damien Ernst
Neurocomputing, 2023

Recurrent networks, hidden states and beliefs in partially observable environments
Gaspard Lambrechts, Adrien Bolland, Damien Ernst
Transactions on Machine Learning Research, 2022

Belief states of POMDPs and internal states of recurrent RL agents : an empirical analysis of their mutual information
Gaspard Lambrechts, Adrien Bolland, Damien Ernst
European Workshop on Reinforcement Learning, 2022

Jointly learning environments and control policies with projected stochastic gradient ascent
Adrien Bolland, Ioannis Boukas, Mathias Berger, Damien Ernst
Journal of Artificial Intelligence Research, 2022

Graph-based optimization modeling language : a tutorial
Mathias Berger, Adrien Bolland, Bardhyl Miftari, Hatim Djelassi, Damien Ernst
Preprint, 2021

A deep reinforcement learning framework for continuous intraday market bidding
Ioannis Boukas, Damien Ernst, Thibaut Théate, Adrien Bolland, Alexandre Huynen, Martin Buchwald, Christelle Wynants, Bertrand Cornélusse
Machine Learning, 2021

Conferences, Workshops, and Summer School Attendances

2024 AI4Science workshop at ICML (Vienna – Austria)
Attended ICML and presented a poster at the workshop.

2024 Micro-workshop on reinforcement learning (Mannheim – Germany)
Attended the workshop.

2023 Frontiers4LCD workshop at ICML (Honolulu – Hawaii, USA)
Attended ICML and presented a poster at the workshop.

2023 Reinforcement learning summer school (University Pompeu Fabra – Barcelona)
Participated in the summer school and presented a poster.

2021 European workshop on reinforcement learning (Polytechnic University of Milan)
Presented a poster at the workshop.

2019 Reinforcement learning summer school (University of Lille)
Participated in the summer school.

Invited Talks

2025 New perspective on intrinsic exploration.
Talk at the department of mathematics at the École Polytechnique (Paris).

2024 Understanding the influence of exploration on the dynamics of policy-gradient algorithms.
Talk at the department of mathematics at the University of Mannheim (Germany).

2024 Behind the myth of exploration in policy gradients.
Online Talk for the Machine Learning and AI Academy.