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Hector Kohler

PhD Candidate

personal website
Github

Experience

PhD Candidate **Mar 2022 — Oct 2025**
INRIA-CRIStAL, top French AI funding AI_PhD@Lille Lille, FR

- Designing and studying algorithms returning interpretable policies (small programs, decision trees) for sequential tasks (medicine, games).
- My main strength is paper reproducibility. I like to code in PyTorch to implement state-of-the-art algorithms.
- Supervising 5 master thesis.
- Teaching Assistant for master courses : Decision Under Uncertainty and Reainforcement Learning (24 hours).
- Teaching Assistant for undergrad courses : Algorithms and Programming (24 hours).
- PhD and Postdocs representatives at the Computer Science department of Université de Lille.
- Attended EWRL 2022 and 2023, and the RL summer school 2023 in Barcelona.

Research Engineer (Intern) **Jun 2021 — Sep 2021**
ENSTA Bretagne Brest, FR

- Deep Reinforcement Learning for Autonomous Underwater Vehicles supervised by Prof. Benoit Clement and Prof. Gilles Le Chenadec. Studied Learning-Based Control with emphasis on stability of the control-loop.
- Results were accepted for publication in IFAC-CAMS 2022 .

President and Co-founder **2018 — 2020**
Artificial Intelligence Student Society at the University of Manchester Manchester, UK

- Organised a range of events on AI and its applications/implications: debates, networking, talks from SMEs and University Researchers. Helped organise and led practical Workshop sessions for STEM students on Python.
- Nominated for best academic society of the year twice in a row (10 out of 400).

Education

Master of Science, Computer Science, with Excellence Diploma, Ranked 4/45 Sorbonne Université **2020 — 2022**

Machine Learning, Multi-Agent Systems, Logic, Algorithms, Optimization. The Excellence Track requires 2 additional courses in Neuroscience and a research internship in the summer.

Bachelor of Science with Honours, Mathematics and Computer Science, University of Manchester **2016 — 2020**

Projects

Semester-long project on Auto-Encoding DRL, for the course Advanced ML and Deep Learning **10/2021 — 02/2022**

- PyTorch library to compare GAIL and AEIRL on Mujoco benchmarks. Reproduce an ICLR 22 paper's results using our library. Conference type poster summarizing results.
- Final grade: 18/20 (rank: 1/63).

Open source development of rlberry, core contributor **2022 — Ongoing**

- Python library for research and teaching in Reinforcement Learning.
- Github, dependencies, Numpy, PyTorch.

Ongoing Reseach in Deep Reinforcement Learning and Empirical RL, **2023 — Ongoing**

- *Scalable Decision Tree search as a Markov Decision Problem* we propose a new SOTA decision tree learning algorithm for supervised learning, submitted at AISTATS 2024.
- *AdaStop: sequential testing for efficient and reliable comparisons of Deep RL Agents*, we propose a new statistical test for Deep RL agent comparison, we use less seeds to draw the same conclusions as existing test. To be submitted at a top journal.
- *Playing object centric Atari games with interpretable policies*, work in progress, imitation learning of Deep NN policies to get small programs playing atari games.

Skills and Community Activity

Technologies Python, PyTorch with GPU, Stable-Baselines 3, R, Matlab, Linux, Git.
Community Tutor for 10 first year Maths students, Teacher for beginner's level French for 10 students, Teacher for 8 years old in disadvantaged schools in Paris for S.O.C.R.A.T.E association. Réunion des Jeunes Mathématiciennes et Informaticiennes.