Nicolas Castanet

Paris, France

✉ castanet@isir.upmc.fr   in LinkedIn   📱 +33.6.58.58.29.10

PhD in Reinforcement Learning

Education

Ph.D. in Reinforcement Learning, ISIR, Sorbonne Université   *10/2021-01/2025*
Supervisors: Olivier Sigaud (MLIA, Sorbonne Université) and Sylvain Lamprier (LERIA, Université d'Angers, ex MLIA Sorbonne Université)
Title: Automatic state representation and goal selection in unsupervised reinforcement learning.

- Published two papers as first author, one of them in ICML, a major international machine learning conference, the other paper is currently under review.
- Worked on Goal Conditionned Reinforcement Learning from the unsupervised framework, involving intrinsic motivation to automatically generate a curiculum of goals.
- Worked on image-based Reinforcement Learning and Representation Learning strategy such image reconstruction (e.g VAE).
- Developed algorithms using xpag ("exploring agents"), a modular reinforcement learning library with JAX agents.
- Used the public HPC cluster Jean Zay to conduct experiments.
- Worked simultaneously as a teacher in Sorbonne University for computer science / machine learning majors from 1st year bachelor up to last year's master's degree.

Master in Computer Science, Sorbonne Université   *2019-2021*
"Données, Apprentissage et Connaissances" (DAC)
Data acquisition and processing, Machine learning, Deep learning.

Bachelor in Computer Science, Sorbonne Université   *2018-2019*

Engineering school, INP ENSEEIHT (Toulouse)   *2016-2018*
Electrical and Automatic Engineering.

Maths preparatory classes - MPSI/PSI, Lycée Sainte-Marie (Paris)   *2014-2016*

Publications

Nicolas Castanet, Olivier Sigaud, and Sylvain Lamprier. Imagine Beyond! Distributionally Robust Auto-Encoding for State Space Coverage in Online Reinforcement Learning. (2025) `https://arxiv.org/abs/2505.17830`

Nicolas Castanet, Olivier Sigaud, and Sylvain Lamprier. Stein variational goal generation for adaptive exploration in multi-goal reinforcement learning. (ICML 2023) `https://proceedings.mlr.press/v202/castanet23a.html`

Teaching

Reinforcement Learning and advanced Deep Learning *2024-2025*
2nd year Master DAC, Sorbonne Université

Python introduction *2023-2024, 2024-2025*
1st year Bachelor, Sorbonne Université

Python game development project, development of simple IA agents *2022-2023*
2nd year Bachelor, Sorbonne Université

Business Intelligence and User Modeling *2022-2023*
1st year Master DAC, Sorbonne Université

Internships

Deep RL/Curriculum Learning - Research internship (M2), LIP6 *03/2021-09/2021*
Under the direction of Sylvain Lamprier (MLIA) and Oliver Sigaud (ISIR).
Automatic Curriculum Learning (ACL) for Deep Reinforcement Learning (DRL). These methods
are applied in the context of sparse or absent reward signal. Research axes :

- Off Policy RL and Relabeling (Hindsight Experience Replay).

- Exploration (Intrinsic motivation, Curiosity ...).

- Automatic Goal Generation, Self-Play.

Gesture classification - Research internship (M1), LIP6 *06/2020-09/2020*
Under the direction of Olivier Schwander, Associate professor in the MLIA team.
Classification of gesture detected by radar micro Doppler Soli :

- Deep learning for time-space data.

- Signal representation with Riemannian geometry.

Skills

- **Computer Science :** Statistical learning, Deep learning, Reinforcement learning.

- **Applied mathematics** : Statistics, Probabilities, Optimization, Differential Geometry.

- **Programming languages :** Python (NumPy, Pandas, Scikit-Learn, PyTorch, Tensorflow, JAX), Java, Javascript, LaTeX.

- **Working environment :** Linux + Git + VS Code & GitHub Copilot

Miscellaneous

Languages
- French : native.
- English : fluent.
- Italian : Beginner

Hobbies
- Trail, running, cycling, climbing, bikepacking.
- Trips : Iceland, Norway, England, Italy.

Tutoring in Mathematics / Physics (Bachelor and high school students) *2015-2019*