

# CLÉMENT ROMAC

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Age : 29 ◇ <https://clementromac.github.io/>

## RESEARCH INTEREST

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My research focuses on Reinforcement Learning (RL) and how it can shape artificial agents' knowledge. Throughout my PhD, I notably studied how Large Language Models (LLMs) can be grounded through online interactions with an environment using RL. I am interested in open-ended learning setups, and my research often involves methods such as curiosity-driven RL or Automatic Curriculum Learning.

## EDUCATION

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**University of Bordeaux, Bordeaux** *2022 - Current*  
Ph.D. in Computer Science  
Pierre-Yves Oudeyer (Inria, FLOWERS) & Thomas Wolf (Hugging Face)

**University of Bordeaux, Bordeaux** *2019 - 2020*  
MSc. in Computer Science  
Algorithms and Models specialisation

**Ynov Informatique Ingésup, Bordeaux** *2014 - 2019*  
Degree in Computer Science engineering  
Data Science specialisation Rank : 1

**High School Les Iris, Lormont** *2011 - 2014*  
High School Degree, with the highest honours Overall Notation : 17.75/20

## WORK EXPERIENCE

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**Hugging Face** *January 2022 - Current*  
*Research Scientist*

- Studying how autonomous Deep RL agents can leverage large Language Models

**Inria (FLOWERS team), Bordeaux** *January 2022 - Current*  
*PhD student*

- Studying how autonomous Deep RL agents can leverage large Language Models

**Inria (FLOWERS team), Bordeaux** *September 2020 - December 2021*  
*Research Engineer*

- Working on an experimental platform to apply curiosity-driven algorithms to automatic discovery of Complex Systems (e.g. self-organizing)

**Inria (FLOWERS team), Bordeaux** *March 2020 - August 2020*  
*Research intern*

- Worked on TeachMyAgent, a benchmark platform for Automatic Curriculum Learning applied to Deep Reinforcement Learning algorithms :
  - Created procedurally generated Box2D environments and embodiments
  - Implemented state-of-the-art Automatic Curriculum Learning methods
  - Built a benchmark setup and benchmarked the methods

— *Paper accepted at ICML 21'*

**Weenove, Bordeaux**

*October 2017 - February 2020*

*Part time Data Scientist*

- In charge of the Machine Learning R&D :
  - Implemented an Automated Machine Learning service
  - Made this service available (Beta) in a Business Intelligence Software (Biwee)
  - Lead the Machine Learning R&D projects
  - Data Science projects

**Scalian, Bordeaux**

*Summer 2017*

*Intern Data Scientist*

- Data Science projects :
  - Time Series Anomaly Detection
  - Barcode localization on drone pictures with Deep Learning
  - Data Exploration project

**Weenove, Bordeaux**

*June 2016 - May 2017*

*Part time Intern Data Scientist*

- Machine Learning R&D :
  - Implemented an Automated Machine Learning service
  - Made this service available (Beta) in a Business Intelligence Software (Biwee)

## PROJECTS

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### **ChatGPT expliqué en 5 minutes (2023)**

A series of short videos explaining Large Language Models. The project can be found **here**.

### **Lamorel (2022)**

Lamorel is a Python library designed for RL practitioners eager to use Large Language Models (LLMs)(**repository**)

### **Automated Discovery Tool (2021)**

A software for assisted and automated discovery of patterns in the exploration of complex systems (**repository**).

### **Interactive Deep RL Demo (2021)**

In-browser interactive demo of Deep Reinforcement Learning agents' adaptation to unknown 2D tasks. The project can be found **here**.

## PUBLICATIONS

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### **MAGELLAN : Metacognitive predictions of learning progress guide autotelic LLM agents in large goal spaces**

Loris Gaven, Thomas Carta, Clément Romac, Sylvain Lamprier, Olivier Sigaud, Pierre-Yves Oudeyer. *Forty-Second International Conference on Machine Learning (ICML) 2025.*

### **WorldLLM : Improving LLMs' world modeling using curiosity-driven theory-making**

Guillaume Levy, Cedric Colas, Pierre-Yves Oudeyer, Thomas Carta, Clement Romac. *Multi-disciplinary Conference on Reinforcement Learning and Decision Making (RLDM) 2025.*

### **Reinforcement Learning for Aligning Large Language Models Agents with Interactive Environments : Quantifying and Mitigating Prompt Overfitting**

Mohamed Salim Aissi, Clement Romac, Thomas Carta, Sylvain Lamprier, Pierre-Yves Oudeyer, Olivier

Sigaud, Laure Soulier, Nicolas Thome. *Findings of the Annual Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics (NAACL) 2025*.

### **SAC-GLAM : Improving Online RL for LLM agents with Soft Actor-Critic and Hindsight Relabeling**

Loris Gaven, Clément Romac, Thomas Carta, Sylvain Lamprier, Olivier Sigaud, Pierre-Yves Oudeyer. *Intrinsically Motivated Open-ended Learning Workshop, NeurIPS 2024*.

### **Grounding Large Language Models in Interactive Environments with Online Reinforcement Learning**

Thomas Carta, Clément Romac, Thomas Wolf, Sylvain Lamprier, Olivier Sigaud, Pierre-Yves Oudeyer. *Fortieth International Conference on Machine Learning (ICML) 2023*.

### **TeachMyAgent : a Benchmark for Automatic Curriculum Learning in Deep RL**

Clément Romac and Rémy Portelas and Katja Hofmann and Pierre-Yves Oudeyer. *Thirty-eighth International Conference on Machine Learning (ICML) 2021*.

### **Meta Automatic Curriculum Learning**

Rémy Portelas and Clément Romac and Katja Hofmann and Pierre-Yves Oudeyer. 2020 (Preprint). abs/2011.08463.

### **Partially Observable Markov Decision Process with Minecraft**

Romac et Béraud. 2019 (Preprint). abs/1903.04311.

## **LANGUAGES**

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<b>French</b>	Native speaker
<b>English</b>	Advanced (TOEIC : 980/990)

## **TEACHING**

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<b>Ecole Nationale Supérieure de Cognitique Bordeaux</b>	<i>October 2024</i>
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*Last year engineering students from AI Specialisation*

*Transformers and LLMs - 14h*

*Reinforcement Learning - 7h*

<b>Ecole Nationale Supérieure de Cognitique Bordeaux</b>	<i>October 2023</i>
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*Last year engineering students from AI Specialisation*

*Transformers and LLMs - 7h*

<b>Ynov Informatique Ingésup Bordeaux</b>	<i>November 2018 - December 2018</i>
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*Masters student, Data Science Specialisation*

*Machine Learning Major - 90h*

## **SERVICE AND LEADERSHIP**

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Co-founded the AI working group of Ynov Informatique Ingésup Bordeaux

— We gather every two weeks on Wednesdays to work on AI projects.

Co-founded and animated (until 2019) the meetup “Les nuits des réseaux de neurones”

— Talks and workshops on Deep Learning starting in the evening and continuing throughout the night.

— Held every month or two months, open to everyone (270 members).

— <https://www.meetup.com/fr-FR/Les-nuits-des-reseaux-de-neurones/>

Co-organizer of the meetup “Bordeaux Machine Learning Meetup”

— Talk and workshops once a month (+1400 members)

— <https://www.meetup.com/fr-FR/Bordeaux-Machine-Learning-Meetup/>

I have also been involved in various dissemination initiatives, in particular towards education (I am co-leading the development of the “ChatGPT explained in 5 minutes” series of videos that is used in French classrooms and now embedded in official trainings for workers from all French ministries)

## **HOBBIES**

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Sport : In my spare time, I enjoy doing sport, from outdoor activities (hiking, mountaineering, running, trail, canoeing...) to football, tennis padel, badminton...

Music : I have been playing bass guitar for several years, including in a jazz fusion band.