Corentin Léger - AI Research Engineer
Website, GitHub, LinkedIn, Google Scholar

Email : corentin.lger@gmail.com
Mobile : +33 7 68 36 91 93

Research Engineer with a strong foundation in Machine Learning and Software development, interested in Reinforcement Learning, Evolutionary Strategies and LLMs. I am currently looking for an engineering position related to one of these fields.

Skills

- **Programming**: Python (advanced), Git, Bash, Web Development, Rust (Basics), SQL, Cloud Computing, Network, CI/CD
- **Frameworks**: Jax, Numpy, PyTorch, TensorFlow, Scikit Learn, Optuna, Hydra, Pandas, Flask, Gym, vLLM, pytest

Experience

- **Inria** — Bordeaux, France
  AI Research Engineer, Flowers Team — *Dec 2023 - Present*
  - **LLM-Culture**: Co-developed the Open-Source LLM-Culture software to simulate and analyze text evolution in LLM-based multi-agent systems [2]. The system models agent interactions based on neighbors outputs, task, and personality across generations. Built NLP (SpaCy, NLTK) and data visualization tools to evaluate text properties, as well as a web interface.
  - **Telephone Games**: Co-authored a paper to explore biases and attractors in multi-turn LLM interactions [1]. Used several models (Llama3-70B, GPT-4o, Mixtral-8x7B) across 50 generations with various tasks and initial texts.
  - **Vivarium**: Developed a multi-agent simulator built in Jax for AI research and teaching, achieving real-time interaction (100+ fps) with Web or Jupyter notebook clients via gRPC. Created a CI/CD pipeline (pytest, Github actions), and supervised a Master's intern to enhance clients features and create educational sessions.
- **Inria** — Bordeaux, France
  AI Research Intern, Flowers and Mnemosyne Teams — *May 2023 - Nov 2023*
  - **ER-MRL**: Researched how optimizing RNNs with Evolutionary Algorithms can improve Deep Reinforcement Learning agents' adaptability in new environments [3] (Sb3, Gym, Optuna). Implemented a parallelized pipeline with Bash and Slurm scripts, to launch and analyze large scale experiments (3e10 training steps on 9 envs) on remote clusters (code).
  - **Parallelization tutorial**: Created a tutorial for parallelized hyper parameter search in ReservoirPy (400+ stars), enabling researchers and students to increase their experiments speed by a factor of 300 on the University Cluster.
- **Connectiv-IT** — Bordeaux, France
  Data Scientist Intern — *May 2022 - Aug 2022*
  - **Data preprocessing**: Applied Pandas and Scikit-Learn to preprocess helicopter maintenance data, performing cleaning, outlier detection (filtered out 25% of unusable data), and used supervised learning to replace 12% of missing values.
  - **Data analysis**: Used statistical analysis (SciPy) and clustering (Scikit-Learn) to identify key trends in maintenance data, and created visualizations and technical reports to support maintenance strategies.

Publications

- [1] **When LLMs Play the Telephone Game**: Perez, J., *Léger, C., Kovač, G., Colas, C., Molinaro, G., Derex, M., Oudeyer, P. Y., Moulin-Frier, C. (2024). Arxiv preprint (**Submitted to ICLR 2025)**
- [2] **Cultural evolution in populations of Large Language Models**: Perez, J., *Léger, C., Ovando-Tellez, M., Foulon, C., Dussauld, J., Oudeyer, P. Y., Moulin-Frier, C. (2024). Arxiv preprint
- [3] **Evolving Reservoirs for Meta Reinforcement Learning**: *Léger, C., Hamon, G., Nisioti, E., Hinaut, X., Moulin-Frier, C. (2024). In International Conference on the Applications of Evolutionary Computation (part of **EvoStar 2024**)
- [4] **Early Empirical Results on Reinforcement Symbolic Learning**: Radji, W., *Léger, C., Bardisbanian, L. (2023). Research report published in **HAL Inria**

Selected Projects

Complete list of projects

- **Open Source Contributions**: Contributed to the Stable-Baselines3 RL library (9k+ stars). Contributed to KanRL by creating an app to interpret RL policies, and benchmarked PPO and Policy Gradient algorithms with KANs.
- **Ebiose**: (Hackathon) Built a tool to optimize multi-LLM agent systems on math tasks using evolutionary strategies (blog post). Matched GPT-4 performance with a system of GPT-3.5 agents.
- **LeRobot**: (Hackathon) Assembled robotic arms and created a real world Reinforcement Learning environment. Recorded an expert dataset and trained an arm to manipulate objects with both online and offline RL.

Education

- **Ecole Nationale Supérieure de Cognitique** — Bordeaux, France
  Master of Science in Computer and Cognitive Sciences; GPA: 4.00 — *Sept. 2020 – Sept. 2023*
  Exchange programs in Data Science and AI at Laval University (Canada) and Enseirb-Matmeca
  Relevant courses: Machine Learning, Deep Learning, Software Development
- **Cycle Préparatoire de Bordeaux (CPBx)** — Bordeaux, France
  Bachelor of Science in Mathematics and Physics, Sport-Study contract in Volley-ball — *Sept. 2018 – Jun. 2020*