Corentin Léger - AI Research Engineer

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AI Research Engineer with 2+ years experience, focusing on Reinforcement Learning, Large Language Models, and Software Engineering. I'm passionate about solving complex, interdisciplinary challenges and continuously expanding my knowledge.

Skills

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

Experience

- **Inria** — Bordeaux, France
  Research Engineer, Flowers Team — *Dec 2023 - Present*
  - **LLM-Culture**: Developed the Open-Source LLM-Culture software to simulate and analyze text evolution in LLM-based multi-agent systems, that led to two research papers [1][2]. The system models agent interactions based on neighbors outputs, task, and personality across generations. Created Natural Language Processing tools with Spacy and Nltk to analyze text properties, and built a user-friendly web interface for non-programmers with Flask.
  - **Vivarium Software**: Developed Vivarium, a multi-agent particle simulator (with an integrated physics engine) built in Jax, for AI research and teaching. Enabled real-time interaction between simulations and web or Jupyter notebook clients with gRPC. Supervised a Master's intern, focusing on enhancing client APIs.
- **Inria** — Bordeaux, France
  AI Research Intern, , Flowers and Mnemosyne Teams — *May 2023 - Nov 2023*
  - **ER-MRL**: Led research to understand how evolving Recurrent Neurals Networks can improve Deep Reinforcement Learning agents' adaptability in new environments [3] (Sb3, Gym, Optuna). Implemented a parallelized experiment pipeline with Bash and Slurm to launch large scale training experiments 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 off 300 on the University Cluster.
- **Connectiv-IT** — Bordeaux, France
  Data Science 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 for imputation.
  - **Data analysis**: Used SciPy for statistical analysis and clustering to identify key trends in maintenance data, and created visualizations and technical reports to support data-driven maintenance strategies.

Publications

Google Scholar

- [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 (under review)
- [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)
- [4] **Early Empirical Results on Reinforcement Symbolic Learning**: Radji, W., Léger, C., Bardisbanian, L. (2023). Research report in HAL Inria

Projects

Complete list of projects

- **Open Source Contributions**: Fixed several issues in the Stable-Baselines3 (8000+ stars) RL Library. Created a Hugging Face app to interpret RL policies using Kolmogorov-Arnold Networks (KANs), trained RL agents with KANs
- **Hackathon : Ebiose**: Participated in a two-day Hackathon where we built a tool to optimize multi-LLM agents systems on math tasks using evolutionary algorithms (blog). The project led to the creation of a start-up.

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
- **Cycle Préparatoire de Bordeaux (CPBx)** — Bordeaux, France
  Bachelor of Science in Mathematics and Physics, Sport-Study Program in Volley-Ball — *Sept. 2018 – Jun. 2020*