# Antoine Bergerault

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Research intern at UZH in multi-agent systems, reinforcement learning and optimization.

## Education

**University of Zurich**, Research Intern, Switzerland — Oct 2025/Apr 2026
**University of California, Berkeley**, Visiting Student Researcher, United States — Feb 2025/Aug 2025
**EPFL**, MSc in Data Science, Switzerland (GPA 5.82/6, Excellence Fellowship holder) — 2023/2025
**Carnegie Mellon University**, ECE Exchange Student, United States (GPA 4.0/4.0) — 2022/2023
**EPFL**, BSc in Communication Systems, Switzerland (GPA 5.66/6, Ranking 1/121) — 2020/2023

## Research Projects

**On Multi-Agent Inverse Reinforcement Learning**, Prof. G. Ramponi — Oct 2025/Apr 2026
- Working on efficient inverse reinforcement learning for multi-agent systems.

**On the Exploitability of Multi-agent imitation learning**, Prof. N. Mehr, V. Cevher — Feb 2025/Aug 2025
*Under review for ICLR 2026*
- Investigating theoretical limits of BC and GAIL based approaches for multi-agent imitation learning.
- Developing new continuity conditions on Markov Games to provide Nash gap guarantees in MA-IL.

**Distributed Optimization from Preference Feedback**, Prof. M. Kamgarpour — Feb 2024/Jun 2024
*Paper written, experiments being finalized*
- Created UCB-based distributed algorithms for pair-wise preference-based optimization.
- Combined Bayesian optimization and game theory for ambiguous objective optimization.

**Knowledge Distillation on State Space Models**, Prof. C. Gülcehre — Sep 2023/Jun 2024
- Studied transformer distillation to fast, low-latency and scalable state space model based networks.
- Anticipating the use of efficient high-throughput language models for data generation in RL training.

**Leveraging LLMs for Strategic Planning**, Prof. E. Xing et al. — Jun 2023/Jul 2024
- Studied game theory for LLM fine-tuning with applications to strategic games and decision-making.
- Study and deployment of Meta Cicero project, an agent playing Diplomacy game online
- Developed a Mafia (Werewolf) game engine for LLM simulations in a highly strategic environment.

## Professional Experience

**Data Scientist (Intern & Part-Time)**, Tradition – Lausanne, Switzerland — Jul 2024/Dec 2024
- Led development of production-ready data pipelines and analytics libraries (acquisition to visualization).
- Developed ML algorithms for time series modeling, FX options pricing and causality analysis.
- Developed and deployed graph-based algorithms for real-time trading route discovery in gas markets.

**Data Analyst Intern**, Spinergie – Paris, France — Jun 2023/Aug 2023
- Built prediction algorithms for missing value imputation in offshore wind intelligence platform.
- Created forecasting models for offshore wind demand and power supply with quantifiable accuracy.

## Teaching Experience

**Student Assistant in Machine Learning (CS-433)**, EPFL – Lausanne, Switzerland — Sep 2024/Feb 2025
- Led weekly exercise sessions for a graduate-level Machine Learning course with 600+ students.
- Provided technical guidance on ML implementations and evaluated projects and final exam.

**Student Assistant in Real Analysis (MATH-101)**, EPFL – Lausanne, Switzerland — Sep 2023/Feb 2024
- Answered student questions during weekly exercise sessions and on an online forum.

## Relevant Projects

**Federated learning with heterogeneous clients**, CMU – Pittsburgh (CA), United States — Spring 2023
- Course project for 18-460 Optimization. Reproducibility study of the FedHybrid paper.
- Report available at bergerault.fr/work/18460_Project_Report.pdf (responsible for theory+implementation).

## Technical Skills

**Programming:** Python (NumPy, Pandas, scikit-learn, PyTorch), SQL, Spark, Git.
**ML & Data Science:** Deep Learning, Reinforcement Learning, Multi-agent Systems, Probabilities & Statistics, Mult-arm bandits.
**Languages:** French (native), English (fluent), German (limited skills), Japanese (basic).