

Lars C.P.M. Quaedvlieg

larsquaedvlieg@outlook.com ❖ +31 628 637 493 ❖ Lausanne, Switzerland

[Website](#) ❖ [LinkedIn](#) ❖ [Projects](#)

WORK EXPERIENCE

Caglar Gulcehre Lab for AI Research

Research Assistant

Oct. 2023 – Present

Lausanne, Switzerland

- I perform part-time research in **state-space models**, **reinforcement learning (RL)**, and **AI for mathematics**.
- Creating a **large language model** (7B+ parameters) for mathematical theorem proving and problem solving, participating in the [AI Mathematics Olympiads competition](#) (*Primary project, in progress*).
- Learning to encode reinforcement learning algorithms with state-space models, on problems requiring a context length of 200,000+ tokens (*Side project, in progress*).

InstaDeep AI

Research Intern

Jun. 2023 – Jan. 2024

Paris, France

- Worked on the PASTA project, which involved pre-training state-action conditioned transformers on a variety of reinforcement learning environments. I was responsible for the pipeline on the Atari domain.
- Implemented and trained a **VQ-VAE** to near pixel-perfect reconstruction of Atari frames.
- Successfully implemented and pre-trained transformers on a vast offline RL dataset containing > 1 billion transitions in a multi-processing setting, resulting in a >80% testing accuracy.
- Fine-tuning the pre-trained transformers using **Offline RL** methods, resulting in outperforming previous state-of-the-art performance by up to 2.5x on some Atari environments.

Laboratory for Information and Inference Systems

Research Assistant (Unofficial)

Nov. 2022 – Oct. 2023

Lausanne, Switzerland

- Developed a method to use **self-supervised learning** for **combinatorial optimization** problems, resulting in a new state-of-the-art for the Maximum Independent Set problem and good out-of-distribution generalization.
- Utilized **graph neural networks** and reinforcement learning for the nurse rostering problem, achieving superior performance across both synthetic and real-world datasets and high out-of-distribution generalization.

Aucos A.G

AI Research Intern

Jun. 2018 – Jun. 2020

Aachen, Germany

- Explored a solution to the online multi-hoist scheduling problem using graph neural networks and **multi-agent reinforcement learning**, enhancing production line throughput by coordinated and learned job allocations.
- Demonstrated a 7.50% to 10% performance improvement over conventional algorithms and ensuring provable deadlock avoidance in all scenarios.

EDUCATION

École Polytechnique Fédérale de Lausanne

MSc in Data Science

Sep 2022 – Jul, 2025 (*Expected*)

Lausanne, Switzerland

- Excellence Fellowship holder; Research Scholarship recipient; 5.7/6 GPA (*Currently*)
- Google Developer Student Club PR Manager: In the founding year of the club, we organized 15 events with 212+ total attendees, and 163 community members together with a team of 11 members.

Maastricht University

BSc in Data Science and Artificial Intelligence

Sep 2019 – Jul, 2022

Maastricht, The Netherlands

- Graduated with *summa cum laude* distinction; Best bachelor's thesis award recipient with a thesis grade of 9.5; Ranked first of 104 within the cohort; 9.50/10 GPA.

- [Student Representative](#): I demonstrated leadership skills in representing peer viewpoints by advocating for their interests, and fostering academic improvements by the enhancement of the program curriculum.
- [MSV Incognito Board Member](#): In three distinct roles within the board, I orchestrated educational and social events for an 800-member study association, demonstrating strong leadership and organizational skills.

SELECTED AWARDS & HONORS

Research Scholar Assistant Feb 2024

Participant in a year-long highly competitive research program, valued at 19,500 CHF. Part-time researcher at the Caglar Gulcerhe's Lab for AI Research (CLAIRE).

Scholar Award, NeurIPS 2023 Dec 2023

Travel award, valued at approximately 2,500 USD, covering registration and hotel costs to come to NeurIPS 2023 in-person.

CS-503 Visual Intelligence Best Project Award Jul 2023

Best project out of 14 teams (including PhD students). Researched the dynamics between predators and prey using self-play on an asymmetric zero-sum game with RL.

Best Bachelor's Thesis Award, Maastricht University Jan 2023

University-wide award for the best bachelor's thesis research among all other students in the cohort, awarded to one student per year.

Master's Excellence Fellowship, EPFL Sep 2022

Two-year fellowship, valued at 40,000 CHF, awarded to ~3% of EPFL master students based on outstanding academic records.

Honors Student, Maastricht University Feb 2021

Participation in the KE@Work honours programme, a part-time research internship in industry alongside the bachelor's programme.

PUBLICATIONS (* = equal contributions)

Boige, R., Flet-Berliac, Y., **Quaedvlieg, L.C.P.M.**, Flajolet, A., Richard, G., & Pierrot, T. ***In Review***
 PASTA: Pretrained Action-State Transformer Agents. arXiv preprint arXiv:2307.10936.
(Submitted to RLC 2024)

Quaedvlieg L.C.P.M.*, Brusca L.*, Skoulakis S., Chrysos G., Cevher V. Dec 2023

Maximum Independent Set: Self-Training through Dynamic Programming. *Advances in neural information processing systems (NeurIPS)*.

Quaedvlieg L.C.P.M. Jul 2023

Optimizing Job Allocation using Reinforcement Learning with Graph Neural Networks. *(Thesis preprint, on my website)*

SKILLS

Research: Foundation Models, Sequential Decision-Making (RL), AI4Math (**Open to all interesting problems!**).

Languages: English (C2), Dutch (C2), German (B1), French (A2).

Programming: Python, Java, SQL, C, C++.

Tools: Jax, Haiku, Optax, Flax, PyTorch, Hydra, Neptune, Google Cloud Platform, HDF5.