Curriculum Vitae

Maxence Faldor

London, United Kingdom
maxencefaldor@gmail.com
maxencefaldor.github.io
twitter.com/maxencefaldor
linkedin.com/in/maxencefaldor/
github.com/maxencefaldor

I am a first year PhD student at Imperial College London in the Adaptive and Intelligent Robotics lab. I am interested in Artificial Intelligence, Open-endedness, Robotics and Artificial Life, with a particular focus on the ability of intelligence to adapt to unforeseen situations in open-ended environments.

Education

PhD in Computer Science **Imperial College London**, London, United Kingdom 2022 – Present
- PhD studies in Artificial Intelligence, Open-endedness and Robotics
- Supervision: Antoine Cully

MSc in Computer Science **ISAE-SUPAERO**, Toulouse, France 2016 – 2020
- Sector: Artificial Intelligence, Domain: Robotics, degree obtained with honors *Very Good*, GPA: 4.02
- Supervision: Emmanuel Rachelson, Dennis Wilson, Master's thesis graded A+

MSc in Operations Research **Paul Sabatier University**, Toulouse, France 2018 – 2020
- Double degree program in advanced optimization, degree obtained with honors *Very Good*
- Supervision: Alain Haït

BSc in Mathematics **Lycée Faidherbe**, Lille, France 2014 – 2016
- Advanced course in Mathematics and Physics for intensive preparation to the national competitive exams for entry into *Grandes Écoles* (CPGE MPSI/PSI*)
- National competitive exam "Mines-Ponts" final rank: 129 / 5,180

Certificates

Deep Learning **Udacity** 2020
A 4-month course by Udacity, AWS and Facebook AI Credential ID: SX4KP5DM

Machine Learning **Standford University** 2019
A 11-week course by Standford University earned on May 11, 2019 Credential ID: JMZ4EYACEYTK

Experience

Data Scientist **Amazon**, Luxembourg, Luxembourg Dec 2020 – Aug 2022
- Improved inventory buying and placement systems driving 3% more one-day deliveries
- Built machine learning models to predict core metrics achieving 96% accuracy
- Evaluated the impact of perfect inventory placement on network speed by solving linear programming problems with more than 300,000 variables

Operations Research intern **Amazon**, Paris, France Apr 2020 – Oct 2020
- Worked in the Delivery Acceleration team to fulfill customers faster across Europe
- Integrated the air network in an Operations Research project in Java used for network design, optimizing speed under operational constraints
- Increased the air network speed by 5% by implementing optimization and automation scripts using Python and Redshift to fine-tune network configurations
- Used ETL and Redshift to automate data analysis, enabling insight on inventory placement opportunities

Data Scientist intern **elseco Limited**, Dubai, United Arab Emirates Apr 2019 – Aug 2019
- Leveraged machine learning to build models that help underwriting activities and give insights to the company
- Populated databases by web scraping data from multiple sources

Software Developer intern **Airbus**, Toulouse, France Sep 2018 – Feb 2019
- Developed tools in Python to spare hundreds of hours of manual work while collaborating with my co-workers using Git in an Agile team with regular scrum meetings
- Implemented unit testing and sanity checks for simulation software, ensuring reliability and accuracy in modeling and simulations

Teaching

Teaching Scholar **Imperial College London**, London, United Kingdom 2022 – Present

Alongside my PhD studies, I teach both undergraduate and postgraduate students, totaling 300 hours/year. My responsibilities include lecturing, conducting tutorials and workshops, developing and grading coursework, and managing modules.

- **Deep Learning** – 70010
  - Run lab sessions and answer questions
  - Manage and mark coursework
- **Mathematical Methods Tutorials** – 40016/40017
  - Lead tutorial sessions for correction of exercises
  - Mark student coursework and exams
- **Principles and Practices of Programming** – 70083
  - Run lab sessions and answer questions
  - Mark student coursework
- **Python Programming** – 70053
  - Course support leader: organise and lead a team of 10 Teaching Assistants
  - Design and improve coursework material
  - Lead tutorial sessions in lab
  - Mark student coursework and exams
  - Give lecture to a large audience on Python deep learning libraries and PyTorch

Associate Fellow **Advance HE**, London, United Kingdom 2023 – Present

Follow the Supporting Learning and Teaching Pathway to prepare to apply for the Associate Fellowship, recognizing individuals who teach and support in higher education.

Teaching Assistant **Lycée Saliège**, Balma, France 2015 – 2016

- Provided support in Mathematics for CPGE students, preparing the competitive exams for entry into *Grandes Écoles*
- Helped students in optimizing their exam preparation through targeted question resolution
- Guide students through step-by-step corrections of exercises and past exam
- Gave students learning and working methods to study more efficiently

Private Tutoring **Lille**, France 2012 – 2020

Provided private lessons in Mathematics, Physics and Computer Science to high-school students

Awards

Invitation – Invitation to extend a GECCO paper that received Best Paper Award for ACM TELO journal 2023

Award – GECCO conference Best Paper Award 2023

Grant – GECCO conference student grant (≈ $200) 2023

Award – machine learning hackathon winner organized by Capgemini 2020

Scholarship – tuition fee waiver granted by the French Ministry of Defense 2016 – 2020

Award – fee waiver for competitive exams granted by the French Government 2016

Outreach

Poster at the Agent Learning in Open-Endedness (ALOE) workshop at NeurIPS 2023

Talk at GECCO conference in Lisbon 2023

Talk at UCL DARK lab during a workshop on Open-endedness 2023

Academic Activities

Organizer of the Imperial College Autonomous Reasoning & Learning (ICARL) seminar series 2023 – Present

- Each month, ICARL hosts a seminar series at Imperial College London, where we invite Artificial Intelligence researchers to give a presentation about their work
- I am responsible for the setup of the lecture theatre and technical equipment (microphones, video cameras, online meeting and so on) to ensure high-quality recordings for our YouTube channel

Organizer of the Imperial College Reinforcement Learning reading group 2023 – Present

Contributor of QDax, a Python framework for Accelerated Quality-Diversity algorithms 2023

Volonteer at GECCO conference 2023

Reviewer for the Agent Learning in Open-Endedness (ALOE) workshop at NeurIPS 2023

Reviewer for the ALIFE conference 2023

Skills

- **Languages**: French (native), English (fluent), Spanish (basic)
- **General computer science**:
  - Proficient with Unix-like operating systems and Shells
  - Container platforms Docker, Singularity, Apptainer
- **Programming Languages**: Advanced with Python, C/C++, Java, MATLAB, Git
- **Cloud Computing** with GCP/AWS

Journal Publications

Maxence Faldor*, Luca Grillotti*, Borja G. León, and Antoine Cully. 2023. *Synergizing Quality-Diversity and Descriptor-Conditioned Reinforcement Learning*. Under review at ACM TELO.

Hannah Janmohamed, **Maxence Faldor**, Thomas Pierrot and Antoine Cully. 2023. *Preference-Conditioned Gradient Variations for Multi-Objective Quality-Diversity*. Under review at IEEE TEVC.

Conference Publications

Maxence Faldor, Félix Chalumeau, Manon Flageat, and Antoine Cully. 2023. *MAP-Elites with Descriptor-Conditioned Gradients and Archive Distillation into a Single Policy*. In Proceedings of the Genetic and Evolutionary Computation Conference (GECCO '23). Association for Computing Machinery, New York, NY, USA, 138–146.
[Paper | Code | Best Paper Award | Kudos]

Maxence Faldor*, Luca Grillotti*, Borja G. León, and Antoine Cully. 2023. *Skill-Conditioned Optimal Policy with Successor Features Representations*. Under review at ICLR.
[Website]

Workshop Publications & Preprints

Maxence Faldor*, Luca Grillotti*, Borja G. León, and Antoine Cully. 2023. *Skill-Conditioned Optimal Policy with Successor Features Representations*. Poster presentation at ALOE workshop NeurIPS 2023.
[Paper | Website]