

# Curriculum Vitae

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## Maxence Faldor

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I am a second 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

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<b>PhD in Computer Science</b>	<b>Imperial College London</b> , London, United Kingdom	2022 – Present
<ul style="list-style-type: none"><li>• PhD studies in Artificial Intelligence, Open-endedness and Robotics</li><li>• Supervision: Antoine Cully</li></ul>		
<b>MSc in Computer Science</b>	<b>ISAE-SUPAERO</b> , Toulouse, France	2016 – 2020
<ul style="list-style-type: none"><li>• Sector: Artificial Intelligence, Domain: Robotics, degree obtained with honors <i>Very Good</i>, GPA: 4.02</li><li>• Supervision: Emmanuel Rachelson, Dennis Wilson, Master's thesis graded A+</li></ul>		
<b>MSc in Operations Research</b>	<b>Paul Sabatier University</b> , Toulouse, France	2018 – 2020
<ul style="list-style-type: none"><li>• Double degree program in advanced optimization, degree obtained with honors <i>Very Good</i></li><li>• Supervision: Alain Haït</li></ul>		
<b>BSc in Mathematics</b>	<b>Lycée Faidherbe</b> , Lille, France	2014 – 2016
<ul style="list-style-type: none"><li>• Advanced course in Mathematics and Physics for intensive preparation to the national competitive exams for entry into <i>Grandes Écoles</i> (CPGE MPSI/PSI*)</li><li>• National competitive exam "Mines-Ponts" final rank: 129 / 5,180</li></ul>		

## Certificates

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<b>Deep Learning</b>	<b>Udacity</b>	2020
A 4-month course by Udacity, AWS and Facebook AI		Credential ID: <a href="#">SX4KP5DM</a>
<b>Machine Learning</b>	<b>Stanford University</b>	2019
A 11-week course by Stanford University earned on May 11, 2019		Credential ID: <a href="#">JMZ4EYACEYTK</a>

## Experience

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<b>Data Scientist</b>	<b>Amazon</b> , Luxembourg, Luxembourg	Dec 2020 – Aug 2022
<ul style="list-style-type: none"><li>• Improved inventory buying and placement systems driving 3% more one-day deliveries</li><li>• Built machine learning models to predict core metrics achieving 96% accuracy</li><li>• Evaluated the impact of perfect inventory placement on network speed by solving linear programming problems with more than 300,000 variables</li></ul>		
<b>Operations Research intern</b>	<b>Amazon</b> , Paris, France	Apr 2020 – Oct 2020
<ul style="list-style-type: none"><li>• Worked in the Delivery Acceleration team to fulfill customers faster across Europe</li><li>• Integrated the air network in an Operations Research project in Java used for network design, optimizing speed under operational constraints</li><li>• Increased the air network speed by 5% by implementing optimization and automation scripts using Python and Redshift to fine-tune network configurations</li><li>• Used ETL and Redshift to automate data analysis, enabling insight on inventory placement opportunities</li></ul>		
<b>Data Scientist intern</b>	<b>elseco Limited</b> , Dubai, United Arab Emirates	Apr 2019 – Aug 2019
<ul style="list-style-type: none"><li>• Leveraged machine learning to build models that help underwriting activities and give insights to the company</li><li>• Populated databases by web scraping data from multiple sources</li></ul>		
<b>Software Developer intern</b>	<b>Airbus</b> , Toulouse, France	Sep 2018 – Feb 2019
<ul style="list-style-type: none"><li>• 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</li><li>• Implemented unit testing and sanity checks for simulation software, ensuring reliability and accuracy in modeling and simulations</li></ul>		

## Teaching

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**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 2016 – 2018

- 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

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**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 ( $\approx$  \$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

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**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

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- 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](#)
- Contributor** of [QDax](#), a Python framework for Accelerated Quality-Diversity algorithms 2023
- Volunteer** at GECCO conference 2023
- Reviewer** for the Agent Learning in Open-Endedness ([ALOE](#)) workshop at NeurIPS 2023
- Reviewer** for the ALIFE conference 2023

## Skills

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- **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

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**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

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**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

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**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](#)]