

# Juan Agustín Duque

Ph.D. Student, Mila – Québec AI Institute

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## EDUCATION

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- **Mila – Québec AI Institute, Université de Montréal** Aug'22 – Present  
Ph.D. student in Computer Science  
Advisor: [Aaron Courville](#)  
GPA: 4.3/4.0  
**St-Pierre-Larochelle Scholarship (2024–25), International Scholarship (2022)**
- **Princeton University** Sept'20 – May'22  
M.S.E. in Computer Science  
Advisor: [Karthik Narasimhan](#)  
GPA: 3.9/4.0  
**Graduate Studentship (2020)**
- **Georgia Institute of Technology** Aug'14 – Dec'18  
B.S. in Computer Science  
Advisors: [Charles Isbell](#), [Michael Loss](#)  
GPA: 4.0/4.0  
**Rank: 1 (Out of 6409 students)**

## CONFERENCE PUBLICATIONS

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( $\alpha$ - $\beta$ ) denotes author order being alphabetical, \* denotes equal contribution

- **Towards Sustainable Investment Policies Informed by Opponent Shaping** [arxiv]  
**Juan Agustín Duque\***, Razvan Ciuca\*, Ayoub Eschchahed, Hugo Larochelle, Aaron Courville  
Accepted at *International Conference on Learning Representations (ICLR 2026)*
- **Advantage Alignment Algorithms** [OpenReview]  
**Juan Agustín Duque\***, Milad Aghajohari\*, Tim Cooijmans, Razvan Ciuca, Tianyu Zhang, Gauthier Gidel, Aaron Courville  
Accepted at *International Conference on Learning Representations (ICLR 2025)*  
**Oral presentation (Top 1.8%)**
- **Q-learners Can Provably Collude in the Iterated Prisoner's Dilemma** [arxiv]  
Quentin Bertrand, **Juan Agustín Duque**, Emilio Calvano, Gauthier Gidel  
Accepted at *International Conference on Machine Learning (ICML 2025)*
- **LOQA: Learning with Opponent Q-Learning Awareness** [arxiv]  
Milad Aghajohari\*, **Juan Agustín Duque\***, Tim Cooijmans, Aaron Courville  
Accepted at *International Conference on Learning Representations (ICLR 2024)*
- **Best Response Shaping** [arxiv]  
Milad Aghajohari, Tim Cooijmans, **Juan Agustín Duque**, Shunichi Akatsuka, Aaron Courville  
Accepted at *Reinforcement Learning Conference (RLC 2024)*

## PRE-PRINTS

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- **Evolution Strategies at the Hyperscale** [arxiv]  
Bidipta Sarkar\*, Mattie Fellows\*, **Juan Agustín Duque\***, Alistair Letcher, Antonio León Villares, Anya Sims, Dylan Cope, Jarek Liesen, Lukas Seier, Theo Wolf, Uljad Berdica, Alexander David Goldie, Aaron Courville, Karin Sevegnani, Shimon Whiteson, Jakob Nicolaus Foerster  
arXiv preprint, 2025.
- **Learning Robust Social Strategies with Large Language Models** [arxiv]  
Dereck Piche, Mohammed Muqeeth, Milad Aghajohari, **Juan Agustín Duque**, Michael Noukhovitch, Aaron Courville  
arXiv preprint, 2025.

- **Recurrent Structural Policy Gradient for Partially Observable Mean Field Games** [\[arxiv\]](#)  
Clarisse Wibault, Johannes Forkel, Sebastian Towers, Tiphaine Wibault, **Juan Agustín Duque**, George Whittle, Andreas Schaab, Yucheng Yang, Chiyuan Wang, Michael Osborne, Benjamin Moll, Jakob Foerster  
arXiv preprint, 2026.

## RESEARCH EXPERIENCE

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- **University of Oxford, Whiteson Research Lab** Oct'25 – Present  
*Visiting Researcher*  
Advisors: [Shimon Whiteson](#), [Jakob Foerster](#)  
Evolution strategies for LLM reasoning; reinforcement learning algorithms for mean-field games.
- **University of Leiden, Applied Quantum Algorithms** Feb'26 – Present  
*Visiting Researcher*  
Advisor: [Anna Dawid](#), [Evert van Nieuwenburg](#)  
Applying deep reinforcement learning techniques to many-particle quantum systems to find ground energy states.
- **Mila – Québec AI Institute** Sept'22 – Present  
*Ph.D. Researcher*  
Advisors: [Aaron Courville](#), [Gauthier Gidel](#)  
Multi-agent reinforcement learning algorithms that learn cooperative and non-exploitable behavior in general-sum games.
- **Princeton NLP Group** Aug'20 – May'22  
*Graduate Researcher*  
Advisors: [Karthik Narasimhan](#), [Elad Hazan](#)  
Pre-trained transformers with self-supervision for rapid fine-tuning in Atari; exploration strategies leveraging simple heuristics to accelerate RL convergence.
- **Georgia Tech, Institute for Robotics and Intelligent Machines** Aug'17 – Dec'18  
*Undergraduate Researcher*  
Advisors: [Charles Isbell](#), [Michael Loss](#)  
Hierarchical RL methods using spectral graph partitioning for programmatic goal selection.

## INDUSTRY EXPERIENCE

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- **LinkedIn** May'21 – Aug'21  
*Machine Learning Intern*  
Advisors: [Zhoutong Fu](#), [Michael Kazi](#)  
Pre-trained a multi-task BERT encoder for downstream NLP tasks; contributed to LLM data collection pipelines.
- **Microsoft** Apr'19 – Jul'20  
*Software Engineer*  
Advisor: [Rong Fang](#)  
Built title generation for news articles, slideshows, and videos; developed cloud micro-services for news processing and ingestion.
- **Microsoft** May'18 – Jul'18  
*Data Science Intern*  
Advisor: [Ying Qiao](#)  
Developed a neural recommendation system based on users' reading history; deployed a live traffic experiment via REST API and client.
- **Google** May'17 – Aug'17  
*Software Engineering Intern*  
Advisor: [Ali Ayyash](#)  
Designed, implemented, and tested an API to improve latency of concurrent moves in Google's cloud resource hierarchy.

## TALKS

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- **Towards Sustainable Investment Policies Informed by Opponent Shaping**
  - Google Paradigms of Intelligence Team (11/2025); hosted by [Alexander Meulemans](#)
  - IVADO McGill Workshop (8/2025); hosted by [Aaron Courville](#)
- **Opponent Shaping at Scale**
  - Foerster Lab for AI Research, University of Oxford (10/2025); hosted by [Jakob Foerster](#)
- **Multi-Agent Reinforcement Learning in the Era of LLMs**
  - Michael Wooldridge’s Group, University of Oxford (8/2025); hosted by [Michael Wooldridge](#)
- **Advantage Alignment Algorithms**
  - ICLR Oral Presentation (4/2025)
  - IVADO Multi-Agent Systems Regroupment (3/2025); hosted by [Aaron Courville](#)

## PROFESSIONAL ROLES AND RESPONSIBILITIES

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- Reviewer in ICLR (’24–’26), NeurIPS (’25), TMLR (’25), ICML (’26).
- Teaching Assistant at Princeton University
  - Introduction to Machine Learning – [’21–’22 / COS 324]
  - Introduction to Programming Systems – [’20–’21 / COS 217]

## ACADEMIC ACHIEVEMENTS

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- **ICLR 2025 Oral Presentation:** awarded to *Advantage Alignment Algorithms*.
- **St-Pierre-Larochelle Scholarship 2024–25:** Université de Montréal.
- **International Scholarship 2022:** Université de Montréal.
- **Cornell–Maryland–Max Planck Pre-Doctoral Research School (CMMRS) 2021.**
- **Graduate Studentship 2020:** Princeton University.
- **Colfuturo Scholarship 2020.**
- **Georgia Tech graduating rank 2018:** Rank 1 among 6409 students.
- **ICFES 2013:** Rank 11 among 685,507 students in Colombia’s national high school exit examination.