Luca Carminati

Born on June 13th, 1997 | Italian citizenship | Based near Milan, Italy | Open to Relocate

A *"full-stack" researcher* designing principled learning algorithms to solve practical problems

Industrial Experience

LeonardoLabs - Future Aircraft Technologies Research Unit — Nov 2021 - Oct 2024

Research Fellow - PhD Grant, **Deep Reinforcement Learning for Multi-UAV Control** — Turin, Italy

- **Applied Deep RL** project implementing state-of-the-art techniques
- Reimplemented **custom simulator** achieving **20x** speedup
- Research on Goal-based RL to improve **Human-AI collaboration**
- **Continuous Validation** with the stakeholder throughout the project development

Visiting Experience

Carnegie Mellon University — Feb 2023 - Jul 2023

Visiting PhD, **Large-scale optimization in games** — Pittsburgh, PA

- Host: Tuomas Sandholm
- Worked on the novel modeling and resolving of *Hidden-role games*
- Designed and developed a large-scale solver able to solve *Avalon* instances with 10^{56} nodes

Education

National PhD programme in Artificial Intelligence — Nov 2021 - Jan 2025 *(expected)*

Politecnico di Milano, PhD student — Milan, Italy

- Advisor: Nicola Gatti, Co-Tutor: Marcello Restelli
- Theme: **Scalable Learning Techniques in Games** - Team Games, Online Learning and Reinforcement Learning
  - → Novel theoretical results for *modeling* team games
  - → Developed *practical* solving algorithms, with new *state-of-the art* performance
  - → Supported by *efficient codebases* run *at scale*

Politecnico di Milano, M.Sc Degree, **Computer Science and Engineering** — Sep 2019 - Oct 2021

- Final Grade: **110 cum laude**, GPA **29.85/30** — Milan, Italy
- Highlights: → AI specialization, see Core Skills
  - → **1st Academic Team** Recommender Systems Challenge 2021
    - Tweet engagement prediction
  - → 1st place at Oracle's High Performance Graph Computing university contest
- Projects: → Software sensing project for Ferrari

Alta Scuola Politecnica — Mar 2019 - Oct 2021

Multidisciplinary Honors Program, **Business, Design, Innovation, Research** — Milan, Italy

- Project: → **Team Leader** of a Multidisciplinary team of Architects, Engineers, Designers
  - → in collaboration with the World Health Organization

Honours Programme — Dec 2020 - Sep 2021

Student Research Program, **Politecnico di Milano** — Milan, Italy

- Merit-based selective programme to introduce final-year student to research activities
- My work won *Best Paper Award* at the *Cooperative AI Workshop* at NeurIPS2021

Politecnico di Torino, Double Degree, M.Sc, **Computer Engineering** — Mar 2019 - Oct 2021

- Final Grade: **110 cum laude** — Turin, Italy

Politecnico di Milano, B.Sc Degree, **Computer Science and Engineering** — Sep 2016 - Oct 2019

- Final Grade: **110 cum laude**, GPA **29.89/30** — Milan, Italy
- Thesis: Java Development of a virtual clone of board game *"Adrenaline"*
- Highlights: → Extracurricular courses on *Effective Storytelling and Presentations*, *Startup Business*
- Project: → ML-based evaluation of the wellbeing of professional footballers

Further contacts: luca.carminati@hotmail.it

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Core Skills

Research	Deep Reinforcement Learning, Multiagent Learning, Algorithmic Game Theory, Search, Large-scale equilibrium computation, Convex Optimization, Recommender Systems
Basics	Machine Learning, Deep Learning, Artificial Intelligence, Statistics, Software Engineering
Coding	Python *(Numpy, Jax, Numba, OpenSpiel, PyTorch, OpenAI Gym, RLlib)*, Rust, C++, AWS, Docker, Linux

Awards

2023 | **Distinguished Reviewer** ICML23

2022 | **Lesmo Award** for the best Italian AI M.Sc Thesis

2021 | **Best Paper Award** Cooperative AI Workshop at NeurIPS 2021

2021 | **Best Academic Team** Recommender Systems Challenge 2021, 3000$ prize, hosted by Twitter

2017 | **Best Freshmen Award** Politecnico di Milano

Conference Publications

[1] L. Carminati, B. H. Zhang, G. Farina, N. Gatti, and T. Sandholm, "Hidden-role games: Equilibrium concepts and computation," *arXiv preprint arXiv:2308.16017*, 2023.
Accepted for publication at *Economics and Computation 2024* as an extended abstract
Full paper soon submitted at *Games and Economic Behavior*

[2] B. Zhang *et al.*, "Subgame solving in adversarial team games," *Advances in Neural Information Processing Systems*, vol. 35, pp. 26686–26697, 2022.

[3] L. Carminati, F. Cacciamani, M. Ciccone, and N. Gatti, "A marriage between adversarial team games and 2-player games: Enabling abstractions, no-regret learning, and subgame solving," in *International Conference on Machine Learning*, 2022, pp. 2638–2657.

Reviewer for ICML22, NeurIPS22, ICLR23, ICML23, NeurIPS23, ICLR24, ICML24

Journal Publications

[4] L. Carminati and F. Cacciamani, "Monte-Carlo Regret Minimization for Adversarial Team Games," *Intelligenza Artificiale*, 2024.
Accepted for publication at *Intelligenza Artificiale*

Preprints and Workshop Publications

[5] L. Carminati *et al.*, "Efficient representations for team and imperfect-recall equilibrium computation," 2024.
Submitted to *Artificial Intelligence Journal*

[6] L. Carminati *et al.*, "Lightweight and Scalable Model for Tweet Engagements Predictions in a Resource-constrained Environment," in *Proceedings of the Recommender Systems Challenge 2021*, in RecSysChallenge '21. 2021, pp. 28–33.

[7] L. Carminati, F. Cacciamani, M. Ciccone, and N. Gatti, "Public information representation for adversarial team games," *Cooperative AI Workshop-NeurIPS*, 2021.

Languages

Italian	Mothertongue
English	B2 - Cambridge FCE obtained in 2016
French	Basic

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