Alberto Maria Metelli

Curriculum Vitae et Studiorum

Dipartimento di Elettronica, Informazione e Bioingegneria
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Summary

Alberto Maria Metelli is an Assistant Professor of Information Processing Systems with the Dipartimento di Elettronica, Informazione e Bioingegneria (DEIB) in the Artificial Intelligence and Robotics Laboratory (AIRLab) at Politecnico di Milano (PoliMi). He obtained the Ph.D. in Information Technology (cum Laude) in March 2021 at Politecnico di Milano defending a thesis about environment configuration in reinforcement learning, awarded the "Premio NeoDottori di Ricerca Marco Cadoli 2021" as the best Italian Ph.D. thesis in Artificial Intelligence (from AIxIA) and published in the book series "Frontiers in Artificial Intelligence and Applications" (FAIA) [B1]. He is co-founder of ML Cube S.r.l., an innovative start-up, providing cutting-edge solutions for machine learning systems and life-cycle-management optimization, nominated by Fortune Italia as one of the top 20 Italian AI start-ups in 2022. His main research interests revolve around artificial intelligence and machine learning for *sequential decision-making*, in particular *reinforcement learning* (RL). He is currently working on theoretical and algorithmic aspects of inverse RL [C42, C27, C4], RL in configurable environments [C52, T2, C41], policy-based RL [C51, C40, C1], automated RL [C36, J7], and RL and multi-armed bandits in structured environments [C36, C29, C8]. He participates in research projects about reinforcement learning for autonomous driving [J14], defense, Industry 4.0, safety-critical networks [W1, R1], and about machine learning for climate science [A6, A5]. He is also interested in algorithms, optimization, statistics, probability, and recommendation systems [W29].

Highlights

- **Assistant professor** at DEIB, Politecnico di Milano, since March 2023.
- **National scientific qualification** as Italian associate professor (sector 09/H1), until February 2034.
- Author/Co-author of 15 publications in peer-reviewed international journals (4 as main contributor, 1 single-author), including JMLR (3), MLJ (3), RAS (1), ESWA (1), IEEE TNNLS (1), IEEE T-ITS (1), and DMKD (1). According to Scimago Journal Rank: **11 articles in Q1 journals**. Author/Co-author of 53 publications in peer-reviewed international conferences (14 as main contributor), including ICML (16), NeurIPS (13), AAAI (7), IJCAI (1), AISTATS (4), COLT (2), and UAI (1). According to GGS Conference Rating: **37 publications in A++ venues** and 6 publications in A+ venues (Class 1).
- Winner of both "**Premio NeoDottori di Ricerca** Marco Cadoli 2021" and "Premio NeoLaureati Leonardo Lesmo 2018" for the best Italian Ph.D. thesis and M.Sc. thesis in Artificial Intelligence respectively, awarded by Associazione Italiana per l'Intelligenza Artificiale (AIxIA).
- **Oral presentation at NeurIPS 2018** (30/4856 submissions, 0.62%) and **notable paper at AISTATS 2023** (32/1689 submissions, 1.9%).
- **Lecturer** of the Ph.D. course Reinforcement Learning (since a.y. 2021-2022) and of the B.Sc. course Computer Science (since a.y. 2023-2024) at Politecnico di Milano. Teaching assistant of M.Sc. course Machine Learning (since a.y. 2021-2022) and of B.Sc./M.Sc. course Foundations of Artificial Intelligence (since a.y. 2021-2022) at Politecnico di Milano.
- **Associate Editor** of IEEE RA-L and **Action Editor** of TMLR. **Program chair and co-organizer** of the 15th European Workshop of Reinforcement Learning (EWRL 2022). **Senior PC member** of AAAI 2022 and IJCAI 2021 and **Area chair** of ICML 2024-2025, NeurIPS 2024, and AISTATS 2025.
- Participation in 8 industrial research projects funded by private companies (2 as **co-PI**) and in 4 competitive research project funded by public institutions (1 as **co-PI** of the local research unit).
- (Co-)Supervisor of 10+ Ph.D. students and of 40+ M.Sc. students at Politecnico di Milano.
- Member of the ELLIS Society and CLAIRE supporter.
- **Co-founder** of ML Cube S.r.l., accredited spin-off of the Politecnico di Milano, born in November 2020.

Academic Experience

Assistant Professor (Ricercatore a tempo determinato (Junior) - L.240/2010, art.24, c.3, lett.a)) *March 2023-*
Politecnico di Milano - Dipartimento di Elettronica, Informazione e Bioingegneria *Milan, Italy*
Research programme: "Artificial intelligence foundations for sequential decision making".
SSD: IINF05/A, GSD: 09/IINF-05 - Sistemi di elaborazione delle informazioni.

Postdoctoral Researcher (Assegnista di ricerca - L.240/2010, art.22) *November 2020-February 2023*
Politecnico di Milano - Dipartimento di Elettronica, Informazione e Bioingegneria *Milan, Italy*
Research title: "Development of reinforcement learning algorithms for autonomous driving applications".
Research manager: Prof. Marcello Restelli.
SSD: ING-INF/05 - Sistemi di elaborazione delle informazioni.

National Scientific Qualifications

National Scientific Qualification as Italian Associate Professor *February 2023*
(Abilitazione Scientifica Nazionale - L.240/2010, art.16)
Professore di II fascia - Settore concorsuale: 09/H1 - Sistemi di elaborazione delle informationi.
Validity: 06/02/2023 - 06/02/2034

National Professional Qualifications

Professional Qualification as Italian Information Engineer *September 2021*
(Abilitazione all'esercizio della professione di Ingegnere dell'Informazione - DPR.328/2001)
Sezione A - Settore dell'informazione. I Sessione 2021 - Politecnico di Milano.

Education

Ph.D. in Information Technology (Dottorato di ricerca) *November 2017-October 2020*
Politecnico di Milano - Dipartimento di Elettronica, Informazione e Bioingegneria *Milan, Italy*
Supervisor: Prof. Marcello Restelli. Tutor: Prof. Nicola Gatti.
Ph.D. Thesis: "Exploiting environment configurability in reinforcement learning".
Reviewers: Prof. Amir-massoud Farahmand (Vector Institute, University of Toronto), Prof. Alessandro Lazaric (Facebook AI, Paris).
Date of award: 11 March 2021. Final Mark: **Laude**.

M.Sc. in Computer Science and Engineering (LM-32 Ingegneria Informatica) *October 2015-July 2017*
Politecnico di Milano *Milan, Italy*
M.Sc. Thesis: "Compatible reward inverse reinforcement learning".
Supervisor: Prof. Marcello Restelli. Co-supervisor: Dott. Matteo Pirotta.
Date of award: 27 July 2017. GPA: 30/30. Final Mark: **110/110 cum Laude**.

B.Sc. in Engineering of Computing Systems (L-8 Ingegneria dell'informazione) *October 2012-July 2015*
Politecnico di Milano *Milan, Italy*
Date of award: 24 July 2015. GPA: 30/30. Final Mark: **110/110 cum Laude**.

High School Diploma *September 2007-July 2012*
IISS Ettore Majorana *Seriate (Bg), Italy*
Specialization in Computer Science (Perito Informatico). Final Mark: 100/100 cum Laude.

Publications

Scientific Productivity **68** publications (**63** entries on Scopus, **73** co-authors according to Scopus)

- International Journals: Author/Co-author of **15 publications** in peer-reviewed international journals (4 as main contributor, 1 single-author), including **Journal of Machine Learning Research** (**3**), **Machine Learning** (**3**), **Robotics and Autonomous Systems** (**1**), **Expert Systems with Applications** (**1**), **IEEE Transactions on Neural Networks and Learning Systems** (**1**), **IEEE Transactions on Intelligent Transportation Systems** (**1**), and **Data Mining and Knowledge Discovery** (**1**).
  - According to Scimago Journal Rank (SJR):[1] **11 publications in Q1** journals (of which 8 in "Artificial Intelligence" area and 3 in "Computer Science Applications" area).
  - According to CORE Journal Ranks:[2] **4 publications in A*** journals and 4 publications in A journals.
- International Conferences: Author/Co-author of **53 publications** in peer-reviewed international conferences (14 as main contributor), including **ICML** (**16**), **NeurIPS** (**13**), **AAAI** (**7**), **IJCAI** (**1**) **AISTATS**

[1] https://www.scimagojr.com
[2] http://portal.core.edu.au/jnl-ranks

(**4**), **COLT** (**2**), and **UAI** (**1**).
- According to GII-GRIN-SCIE (GGS) Conference Rating:[3] **37 publications in A++** venues and 6 publications in A+ venues (Class 1).
- According to CORE Conference Ranks:[4] **39 papers in A*** venues and 6 papers in A venues.

Publication Impact	Google Scholar:	citations **1114**	h-index **18**	i10-index **23**
(accessed on 29 Decmber 2024)	Scopus:	citations **489**	h-index **12**	i10-index **15**

Top-12 Publications[5]

[1] Filippo Fedeli, Alberto Maria Metelli, Francesco Trovò, and Marcello Restelli. "IWDA: Importance Weighting for Drift Adaptation in Streaming Supervised Learning Problems". **IEEE Transactions on Neural Networks and Learning Systems**, 34(10):6813–6823, 2023. CORE 2020: **A***. SJR 2023: **Q1**.
(link: https://doi.org/10.1109/TNNLS.2023.3265524).
The paper introduces a novel approach to learning in non-stationary environments using importance weighting, marking a step toward automated machine learning. I designed the algorithmic solution, conducted the theoretical analysis, contributed to the experimental evaluation, and participated in the paper writing.

[2] Alberto Maria Metelli, Guglielmo Manneschi, and Marcello Restelli. "Policy space identification in configurable environments". **Machine Learning**, 111(6):2093–2145, 2022. CORE 2020: **A**. SJR 2022: **Q1**.
(link: https://doi.org/10.1007/s10994-021-06033-3).
The paper introduces the novel problem of "policy space identification", a first approach for addressing it, and two application scenarios. I developed the problem formulation, designed the identification rules, conducted the theoretical analysis, performed the imitation learning experiments, and wrote the majority of the paper.

[3] Alberto Maria Metelli, Matteo Pirotta, Daniele Calandriello, and Marcello Restelli. "Safe Policy Iteration: A Monotonically Improving Approximate Policy Iteration Approach". **Journal of Machine Learning Research**, 22(97):1–83, 2021. CORE 2020: **A***. SJR 2021: **Q1**.
(link: http://jmlr.org/papers/v22/19-707.html).
The paper addresses approximate policy iteration by presenting the first convergence proof for safe policy iteration, introducing a novel algorithm, and providing new experimental evaluations. I developed the convergence proof, designed the algorithm, conducted the experimental evaluations, and wrote the paper.

[4] Amarildo Likmeta, Alberto Maria Metelli, Giorgia Ramponi, Andrea Tirinzoni, Matteo Giuliani, and Marcello Restelli. "Dealing with multiple experts and non-stationarity in inverse reinforcement learning: an application to real-life problems". **Machine Learning**, 110(9):2541–2576, 2021. CORE 2020: **A**. SJR 2021: **Q1**.
(link: https://doi.org/10.1007/s10994-020-05939-8).
The paper presents three significant real-world applications of inverse reinforcement learning, tackling two key methodological challenges: non-stationarity and multiple experts. I developed the approach for non-stationary experts, conducted the experiments in Section 7, and wrote the first three sections of the paper.

[5] Alberto Maria Metelli, Matteo Papini, Nico Montali, and Marcello Restelli. "Importance Sampling Techniques for Policy Optimization". **Journal of Machine Learning Research**, 21(141):1–75, 2020. CORE 2020: **A***. SJR 2020: **Q1**.
(link: http://jmlr.org/papers/v21/20-124.html).
This paper introduces novel techniques for variance reduction in off-policy learning using importance sampling, i.e., per-decision and multiple importance sampling. I developed the theoretical and algorithmic contributions in Sections 4 and 5, conducted the experiments in the action-based setting, and wrote the majority of the paper.

[6] Amarildo Likmeta, Alberto Maria Metelli, Andrea Tirinzoni, Riccardo Giol, Marcello Restelli, and Danilo Romano. "Combining reinforcement learning with rule-based controllers for transparent and general decision-making in autonomous driving". **Robotics and Autonomous Systems**, 131:103568, 2020. CORE 2020: B. SJR 2020: **Q1** (Computer Science Applications).
(link: https://doi.org/10.1016/j.robot.2020.103568).
This paper explores the application of reinforcement learning techniques to autonomous driving, with a primary focus on the interpretability of agent behavior. I contributed to the design of the environment (state and action spaces), the development of the rule-based policy, and the writing of the paper, particularly up to Section 7.

[7] Alberto Maria Metelli, Filippo Lazzati, and Marcello Restelli. "Towards Theoretical Understanding of Inverse Reinforcement Learning". In **International Conference on Machine Learning (ICML)**, volume 202, pages

[3] https://scie.lcc.uma.es/

[4] http://portal.core.edu.au/conf-ranks

[5] The first author represents the main contributor; in the case of multiple main contributors (equal contribution), they are marked with *. Alphabetic order of authors is denoted with (α-β order). For both journal and conference publications, the rating is the most recent available in the year of publication. For Scimago Ranks (SJR), the "Artificial Intelligence" quartile is reported if no further specification. The complete list of publications is reported in the annex List of Publications.

24555–24591. PMLR, 2023. **Acceptance rate: 1827/6538 (27.9%), Oral: 156/6538 (2.39%)**. CORE 2023: **A***. GGS 2021: **A++**.
(link: https://proceedings.mlr.press/v202/metelli23a.html).
The paper presents the first comprehensive analysis of the inverse reinforcement learning problem, establishing a novel sample complexity lower bound. I developed the construction of the lower bound, derived it along with the other theoretical results, and wrote the majority of the paper.

[8] Alberto Maria Metelli, Alessio Russo, and Marcello Restelli. "Subgaussian and Differentiable Importance Sampling for Off-Policy Evaluation and Learning". In **Advances in Neural Information Processing Systems 34 (NeurIPS)**, pages 8119–8132. 2021. **Acceptance rate: 2344/9122 (25.7%), Spotlight: 260/9122 (2.9%)**. CORE 2021: **A***. GGS 2021: **A++**.
(link: https://proceedings.neurips.cc/paper/2021/hash/4476b929e30dd0c4e8bdbcc82c6ba23a-Abstract.html).
The paper proposes a novel correction for importance weighting, with desirable statistical and optimization properties, and tests it in the contextual bandit setting. I designed the correction, conducted its theoretical analysis (including the derivation of a concentration inequality), and wrote the majority of the paper.

[9] Alberto Maria Metelli*, Amarildo Likmeta*, and Marcello Restelli. "Propagating Uncertainty in Reinforcement Learning via Wasserstein Barycenters". In **Advances in Neural Information Processing Systems 32 (NeurIPS)**, pages 4335–4347, 2019. **Acceptance rate: 428/6743 (21.2%)**. CORE 2018: **A***. GGS 2018: **A++**.
(link: https://papers.nips.cc/paper/8685-propagating-uncertainty-in-reinforcement-learning-via-wasserstein-barycenters).
The paper presents a novel approach using distributions to represent and propagate uncertainty in value-based reinforcement learning. I conceived the idea of employing Wasserstein barycenters, conducted the convergence analysis, and wrote the majority of the paper.

[10] Alberto Maria Metelli, Emanuele Ghelfi, and Marcello Restelli. "Reinforcement Learning in Configurable Continuous Environments". In **International Conference on Machine Learning (ICML)**, volume 97, pages 4546–4555. PMLR, 2019. **Acceptance rate: 773/3424 (22.6%)**. CORE 2018: **A***. GGS 2018: **A++**.
(link: http://proceedings.mlr.press/v97/metelli19a.html).
The paper presents and analyzes a new algorithm for learning in configurable environments with continuous state-action spaces. I devised the algorithm, provided the theoretical analysis, performed the experiment on the TORCS simulator, and wrote the majority of the paper.

[11] Alberto Maria Metelli*, Mirco Mutti*, and Marcello Restelli. "Configurable Markov Decision Processes". In **International Conference on Machine Learning (ICML)**, volume 80, pages 3488–3497, 2018. **Acceptance rate: 618/2473 (25.0%)**. CORE 2018: **A***. GGS 2018: **A++**.
(link: http://proceedings.mlr.press/v80/metelli18a.html).
This paper introduces the concept of environment configuration in reinforcement learning by proposing the novel framework of configurable Markov decision processes. I formulated the framework, developed the learning algorithm, conducted the racetrack experiment, and contributed to the writing of the paper.

[12] Alberto Maria Metelli, Matteo Pirotta, and Marcello Restelli. "Compatible Reward Inverse Reinforcement Learning". In **Advances in Neural Information Processing Systems 30 (NIPS)**, pages 2047–2056, 2017. **Acceptance rate: 678/3240 (20.9%)**. CORE 2017: **A***. GGS 2017: **A++**.
(link: http://papers.nips.cc/paper/6800-compatible-reward-inverse-reinforcement-learning).
The paper presents a novel approach to constructing a feature space for inverse reinforcement learning. I developed the underlying idea for feature construction, designed the reward selection approach, conducted the full experimental evaluation, and wrote the majority of the paper.

Fellowships, Awards, and Recognitions

Personal Research Awards and Recognitions

AAAI 2024 - New Faculty Highlights *December 2023*
Association for the Advancement of Artificial Intelligence (AAAI)
Description: Invited speaker program at AAAI conference (GGS: A++) highlighting AI researchers who have just begun careers as new faculty members or the equivalent in industry.
(link: https://aaai.org/aaai-conference/nfh-24-program/)

DAAD AInet Fellowship - Postdoc-NeT-AI on Human-centered AI *October 2023*
German Academic Exchange Service (DAAD)
Description: Fellowship granted to excellent early-career researchers to meet the German AI research community.
(link: https://www.daad.de/en/the-daad/postdocnet/fellows/fellows/)

Publication of the Ph.D. Thesis as Book *June 2022*
European Association for Artificial Intelligence (EurAI)
Description: Publication of the Ph.D. thesis in the "Dissertation in AI" series "Frontiers in Artificial Intelligence and Applications" as a recognition for the outstanding theses participating in the EurAI "Dissertation Award".

(link: https://www.iospress.com/catalog/books/exploiting-environment-configurability-in-reinforcement-learning)

Winner of "Premio NeoDottori di Ricerca Marco Cadoli 2021" *November 2021*
Associazione Italiana per l'Intelligenza Artificiale (AIxIA)
Description: Award for the best Italian Ph.D. thesis in Artificial Intelligence (public selection). Amount: 1000€.
(link: https://aixia.it/premi/premio-per-neodottori-di-ricerca-marco-cadoli-annuale/)

Recipient of a "Springer Award" *April 2021*
IT PhD Board of Professors, Politecnico di Milano
Description: Publication in a Polimi SpringerBriefs volume, for the best results from the IT PhD program doctors.
(link: https://link.springer.com/book/10.1007/978-3-030-85918-3)

Winner of "Premio NeoLaureati Leonardo Lesmo 2018" *October 2018*
Associazione Italiana per l'Intelligenza Artificiale (AIxIA)
Description: Award for the best Italian M.Sc. thesis in Artificial Intelligence (public selection). Amount: 500€.
(link: https://aixia.it/premi/premio-per-neolaureati-leonardo-lesmo-annuale/)

Grants

5k€ Google Cloud Platform Credits - Gemma Academic Program *May 2024*
Google Cloud
Description: Google Cloud credits supporting research in reinforcement learning and large language models.

6.6k€ Google Cloud Education Credits *February 2024*
Google Cloud
Description: Google Cloud credits as a support for the Ph.D. course "Reinforcement Learning".

80k CINECA GPU hours *October 2023*
CINECA Supercomputing Centre
Description: Support for development of efficient policy gradient algorithms for large-scale industrial plants.

Conference Awards and Recognitions

Two Spotlight Papers at ICML 2024 (top 3.5%) *July 2024*
International Conference on Machine Learning 2024, Vienna, Austria
Description: Best 235 papers out of 9473 submissions (top 3.5%) to ICML 2024 (GGS: **A++**) for the papers "Learning Optimal Deterministic Policies with Stochastic Policy Gradients" [C12] and "Best Arm Identification for Stochastic Rising Bandits" [C16].

Oral Presentation at ICML 2023 (top 2.39%) *July 2023*
International Conference on Machine Learning 2023, Honolulu, HI, US
Description: Best 156 papers out of 6538 submissions (top 2.39%) to ICML 2023 (GGS: **A++**) for the paper "Towards Theoretical Understanding of Reinforcement Learning" [C27].

Notable Paper at AISTATS 2023 (top 1.9%) *April 2023*
International Conference on Artificial Intelligence and Statistics 2023, Valencia, Spain
Description: Best 32 papers out of 1689 submissions (top 1.9%) to AISTAS 2023 (GGS: **A+**) for the paper "A Tale of Sampling and Estimation in Discounted Reinforcement Learning" [C30].

Spotlight Presentation at NeurIPS 2021 (top 2.9%) *December 2021*
Neural Information Processing Systems 2021, Online
Description: Best 260 papers out of 9122 submissions (top 2.9%) to NeurIPS 2021 (GGS: **A++**) for the paper "Subgaussian and Differentiable Importance Sampling for Off-Policy Evaluation and Learning" [C40].

Oral Presentation at NeurIPS 2018 (top 0.62%) *December 2018*
Neural Information Processing Systems 2018, Montreal, Canada
Description: Best 30 papers out of 4856 submissions (top 0.62%) to NeurIPS 2018 (GGS: **A++**) for the paper "Policy Optimization via Importance Sampling" [C51].

Student Awards and Recognitions

Winner of a Ph.D. Scholarship *July 2017*
Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR)
Description: Ranked first among 50 applicants of Politecnico di Milano in Computer Science and Engineering area.

Recipient of a "Le migliori matricole dell'A.A. 2012/2013" award *May 2014*
Politecnico di Milano

Description: Awarded for the best freshmen students of Politecnico di Milano.

B.Sc. and M.Sc. Student Scholarships *2012-2017*
Politecnico di Milano
Description: Full reduction of student tuition fees for merit GPA > 29/30 (each eligible year).

Enrollment to the "Albo Nazionale delle Eccellenze" *2012*
Istituto Nazionale di Documentazione Innovazione e Ricerca Educativa (INDIRE)
Description: National register of the best among the Italian high-school graduates.
(link: https://www.indire.it/eccellenze/)

Competitions

Runner-Up (Best Academic Team) at ACM RecSys Challenge 2017 *July 2017*
Association for Computing Machinery (ACM)
Description: Recommender systems challenge with a team of 8 students from Politecnico di Milano. Amount: 1500€.
(link: http://www.recsyschallenge.com/2017/)

Winner of "Migliori Elaborati 2011-2012" *June 2012*
IISS Ettore Majorana
Description: Best project award for the developing of a database system to manage remedial courses.

Winner of a Bronze medal at "Olimpiadi Italiane di Informatica 2011" *October 2011*
Associazione Italiana per l'Informatica ed il Calcolo Automatico (AICA)
Description: Italian Olympiad in Informatics, ranked 24th.
(link: https://www.olimpiadi-informatica.it/index.php/olimpiadi-italiane-2010-2011.html)

Reviewing Service Recognitions

He has been recognized for the reviewing service for international conferences: NeurIPS 2019 (top 50%), ICML 2020 (top 33%), AAAI 2021 (top 25%), ICLR 2021 (outstanding reviewer), AISTATS 2022 (top 10%), NeurIPS 2023 (top reviewer).

International Conference Grants

He has been awarded travel/accommodation/registration support for international conference participation, granted by conference organizers via conference sponsor: NIPS 2017 (Long Beach, CA, US), ICML 2018 (Stockholm, Sweden), NeurIPS 2018 (Montreal, Canada), ICML 2019 (Long Beach, CA, US), NeurIPS 2019 (Vancouver, Canada), ICML 2022 (Baltimore, MD, US), NeurIPS 2023 (New Orleans, LA, US), ICML 2024 (Vienna, Austria), NeurIPS 2024 (Vancouver, Canada).

Teaching Activity[6]

Primary Responsibility Teaching Activities

Lecturer and coordinator of Computer Science *2023-2025*
Politecnico di Milano *Milan, Italy*
6 CFU - B.Sc. in Civil Engineering - Campus Leonardo - II semester. Avg no. of students: ~100.
a.y. 2023-2024 (36 hours), a.y. 2024-2025 (36 hours).

Lecturer and co-coordinator of Reinforcement Learning *2021-2022, 2023-2024*
Politecnico di Milano *Milan, Italy*
5 CFU - Ph.D. in Information Technology - Campus Leonardo. Avg no. of students: ~80. Co-coordinator: Prof. Marcello Restelli.
a.y. 2021-2022 (15 hours, corresponding to 3 CFU), a.y. 2023-2024 (15 hours, corresponding to 3 CFU).

Lecturer of Deep Reinforcement Learning *2021-2022*
GSSI - Gran Sasso Science Institute *Online*
Ph.D. in Computer Science. Avg no. of students: ~10.
a.y. 2021-2022 (2 hours).

[6] Total 104 hours of teaching and 402 hours of teaching assistance.

Teaching Assistance Activities

Teaching Assistant of Machine Learning *2021-2025*
Politecnico di Milano *Milan, Italy*
5 CFU - M.Sc. Computer Science and Engineering and M.Sc. Mathematical Engineering - Campus Leonardo - II semester. Avg no. of students: ~100. Lecturer: Prof. Daniele Loiacono.
a.y. 2021-2022 (10 hours), a.y. 2022-2023 (20 hours), a.y. 2023-2024 (20 hours), a.y. 2024-2025 (20 hours).

Teaching Assistant of Foundations of Artificial Intelligence *2021-2025*
Politecnico di Milano *Milan, Italy*
5 CFU - B.Sc. and M.Sc. Computer Science and Engineering - Campus Leonardo - I semester. Avg no. of students: ~80+80. Lecturers: Proff. Francesco Amigoni and Pier Luca Lanzi.
a.y. 2021-2022 (10+10 hours), a.y. 2022-2023 (16+16 hours), a.y. 2023-2024 (8+6 hours), a.y. 2024-2025 (8+6 hours).

Teaching Assistant of Computer Science (Informatica) *2018-2023*
Politecnico di Milano *Milan, Italy*
8 CFU - B.Sc. in Environmental and Land Planning Engineering - Campus Leonardo - I semester. Average no. of students: ~150. Lecturer: Prof. Andrea Bonarini.
a.y. 2018-2019 (24 hours), a.y. 2019-2020 (24 hours), a.y. 2020-2021 (30 hours), a.y. 2021-2022 (30 hours), a.y. 2022-2023 (24 hours).

Laboratory Teaching Assistant of Computer Science (Informatica) *2018-2021*
Politecnico di Milano *Milan, Italy*
8 CFU - B.Sc. in Environmental and Land Planning Engineering - Campus Leonardo - I semester. Avg no. of students: ~150. Lectuter: Prof. Andrea Bonarini.
a.y. 2018-2019 (20 hours), a.y. 2019-2020 (20 hours), a.y. 2020-2021 (20 hours).

Laboratory Teaching Assistant of Computer Science A (Informatica A) *2017-2018*
Politecnico di Milano *Milan, Italy*
10 CFU - B.Sc. in Management Engineering - Campus Bovisa - I semester. Avg no. of students: ~80. Lecturer: Prof. Florian Daniel.
a.y. 2017-2018 (36 hours).

Academic Tutor *2020*
Cefriel S.c.a.r.l. *Milan, Italy*
Supervision of a student for the project of the Master CEFRIEL on AI&ML (24 hours).

Teaching Activity for Professional Audience

Lecturer *September 2024*
EIT Digital Summer School - AI4Sustainability *Milan, Italy*
Avg no. of students: ~40. 2 hours.

Lecturer and co-coordinator *November 2024*
ENI Summer School - Reinforcement Learning and Online Learning *San Donato Milanese, Italy*
Avg no. of students: ~10. 13.5 hours. Co-coordinator: Matteo Papini.

Committees

Examination Committees

President of the Ph.D. Final Examination Committee *April 2023*
Ph.D. in Information Technology - Politecnico di Milano *Milan, Italy*
Candidate: Dr. Giulia Romano. Thesis: "Pricing and advertising strategies in e-commerce scenarios"
PhD Committee: Proff. Alberto Maria Metelli, Ioannis Caragiannis (Aarhus University, Denmark), Negin Golrezaei (MIT Sloan School of Management, Cambridge, Massachusetts, US).

Selection Committees

Member of the Public Selection Committee for Research Fellowships *May 2023-*
(Assegni di Ricerca) - *DEIB - Politecnico di Milano* *Milan, Italy*
"Development of adaptive reinforcement learning algorithms for control of industrial plants" (president, May 2023)
"Development of reinforcement learning techniques for Industry 4.0" (member, June 2023)
"Development of reinforcement learning techniques for Industry 4.0" (member, October 2023)
"Development of reinforcement learning techniques for Real-World Applications" (member, January 2024)

"Development of Reinforcement Learning Algorithms for Behavior Recommendation" (member, September 2024)
"Developing Machine Learning Algorithm to Predict Immunotherapy Effectiveness in Non-small Cell Lung Cancer" (member, November 2024)

Member of the Public Selection Committee for Research Support Activities *June 2023-*
(Attività di Supporto alla Ricerca) - *DEIB - Politecnico di Milano* *Milan, Italy*
"Distributed Reinforcement Learning for Industrial Production Systems" (member, June 2023)

Research Projects

Competitive Research Projects

AI4REALNET (AI for REAL-world NETwork operation) *October 2023-March 2027*
HORIZON EUROPE
Role: **Co-principal investigator** of the local research unit and **WP co-leader** (with Prof. Marcello Restelli).
Topic: Reinforcement learning for operating complex real-world network infrastructures.
Project coordinator: INESC TEC, Porto, Portugal. Funding institution: European Union. Budget: 4M€ (456k€ to Politecnico di Milano). Duration: 42 months.

iBeCHANGE *December 2023-November 2028*
HORIZON RIA
Role: Research scientist and **deliverables review board member**.
Topic: Develop the iBeChange platform for personalizing cancer prevention.
Project coordinator: Istituto Europeo Di Oncologia Srl (IEO), Milan, Italy. Local co-principal investigators: Proff. Francesco Trovò, Emilia Ambrosini. Funding institution: European Union. Budget: 5.9M€ (644k€ to Politecnico di Milano). Duration: 60 months.

FAIR (Future Artificial Intelligence Research) *November 2022-October 2025*
Extended Partnership - National Recovery and Resilience Plan (PNRR)
Role: Research scientist and **data management plan responsible** of the spoke.
Topic: Artificial intelligence: foundational aspects - Spoke 4: Adaptive AI.
Spoke coordinator: Politecnico di Milano (Prof. Nicola Gatti). Funding institution: Italian Ministry of University and Research (MUR). Budget: 12M€ (6M€ to Politecnico di Milano). Duration: 36 months.

CLINT (CLImate INTelligence) *July 2021-June 2025*
HORIZON 2020
Role: Research scientist.
Topic: Extreme events detection, attribution and adaptation using machine learning.
Project coordinator: Politecnico di Milano (Prof. Andrea Castelletti). Funding institution: European Union.
Budget: 6M€ (1.1M€ to Politecnico di Milano). Duration: 48 months.

Competitive Research Projects for Computational Time

PGCLaSI - Policy Gradients for Control of Large-Scale Industrial Plants *October 2023-July 2024*
CINECA Supercomputing Centre - Class C Project
Role: Principal Investigator.
Topic: Development of efficient policy gradient algorithms for large-scale industrial plants.
Grant: 80k GPU hours.

Industrial-funded Research Projects

MADE S.c.a.r.l. *July 2024-July 2025*
CC Auto Tune: ottimizzazione automatica dei parametri del Performance Controller per Compressori Centrifughi (partnership with - Nuovo Pignone Tecnologie S.r.l. (Baker Hughes group))
Role: **Coordinator and Principal investigator** (with Proff. Matteo Papini and Marcello Restelli). Budget: 80k€ + VAT.

Nuovo Pignone Tecnologie S.r.l. (Baker Hughes group) *April 2023-January 2024*
Development of reinforcement learning algorithms for the control of industrial compressors
Role: **Coordinator and Principal investigator** (with Prof. Marcello Restelli). Budget: 62k€ + VAT.

ML cube S.r.l. *December 2020-December 2022*
Life-Cycle-Management and Optimization of Machine learning algorithms in real-time biddings
Role: Research scientist.
Co-principal investigators: Proff. Marcello Restelli, Nicola Gatti, Francesco Trovò. Budget: 84k€ + VAT.

Nuovo Pignone Tecnologie S.r.l. (Baker Hughes group) *October 2021-June 2022*
PID controller tuning using Reinforcement Learning
Role: Research scientist.
Principal investigator: Prof. Marcello Restelli. Budget: 40k€ + VAT.

Leonardo S.p.A. *May 2021-*
Machine Learning per l'Autonomia dei Velivoli
Role: Research scientist.
Co-principal investigators: Proff. Marcello Restelli and Nicola Gatti. Budget: 250k€ + VAT.

Ferrari S.p.A. *December 2020-January 2021*
Reinforcement Learning Techniques for Developing Artificial Test Drivers on a F1 Simulator
Role: Research scientist.
Principal Investigator: Prof. Marcello Restelli. Budget: 80k€ + VAT.

Magneti Marelli S.p.A. *March 2019-February 2020*
Decision Making based on Reinforcement Learning for Automated Driving (2nd project)
Role: Research scientist. Principal investigator: Prof. Marcello Restelli. Budget: 60 k€ + VAT. Reference Publications: [W26, J14].

Magneti Marelli S.p.A. *March 2018-February 2019*
Decision Making based on Reinforcement Learning for Automated Driving (1st project)
Role: Research scientist. Principal investigator: Prof. Marcello Restelli. Budget: 56k€ + VAT.

Student Supervision

He is currently **advising** (relatore) **2 Ph.D. students**:

1. **Filippo Lazzati**, "Provably Efficient Algorithms for Reward Learning", Ph.D. in Information Technology (Cycle: XXXIX), DEIB, Politecnico di Milano.
2. **Alessandro Montenegro**, "Policy-based Methods for Realistic Reinforcement Learning Applications", Ph.D. in Information Technology (Cycle: XXXIX), DEIB, Politecnico di Milano. Co-advisors: Matteo Papini, Marcello Restelli.

He **co-supervised 1 concluded Ph.D. thesis** in Computer Science and Engineering at Politecnico di Milano and he is currently **co-supervising 11 Ph.D. students** mostly of the Information Technology programme at Politecnico di Milano.

He **advised** (relatore) **6 M.Sc. theses** and **co-advised** (correlatore) **38 concluded M.Sc. theses** mostly in Computer Science and Engineering at Politecnico di Milano and he is currently **(co-)supervising 12 M.Sc. students** at Politecnico di Milano. Among them, **4** students were admitted to the **Honours Programme of Politecnico di Milano** and **1** student won the **"Premio NeoLaureati Leonardo Lesmo 2019"** and **1** student was awarded a special mention in the context of the **"Premio NeoLaureati Leonardo Lesmo 2024"** for the best Italian M.Sc. thesis in artificial intelligence (AIxIA).

He is the **research manager** (responsabile) **of 2 research fellowships** (assegni di ricerca) at DEIB Politecnico di Milano.

Technology Transfer

Start-ups and Spin-offs

Co-founder of ML Cube S.r.l. *November 2020*
Accredited spin-off of Politecnico di Milano
Innovative start-up providing cutting-edge solutions for machine learning systems and life-cycle management optimization. (link: https://www.mlcube.com)
Nominated by Fortune Italia as one of the **top 20 Italian AI start-ups** in 2022.
Funding: **"Smart & Start Italia"** granted by Ministero dello Sviluppo Economico (MiSE) to innovative start-ups (~323 k€).

Open-Source Tools

ARLO (Automated Reinforcement Learning Optimizer) *July 2021-*
Description: Open-source Python library for Automated Reinforcement Learning (AutoRL), aimed at making RL accessible by non-expert users automatizing the development of a learning pipeline. Project status: First released in

April 2022, still in development. Role: Research scientist. (github: https://github.com/arlo-lib/ARLO, doc: https://arlo-lib.github.io/arlo-lib/index.html)

Development of Products

ML Cube Platform *November 2020-*
Description: B2B innovative Machine Learning product for Life-cycle Management real-time Optimization, aimed at preventing model obsolescence and providing automatic diagnosis and retraining of the models in production. Project status: In production. Role: Research scientist. (link: https://www.mlcube.com/mlcube-platform)

AD Cube Platform *December 2021-*
Description: AI platform for the optimization of multi-channel advertising campaigns. Project status: In production. Role: Research scientist. (link: https://adcube.ai/)
Funding: Winner of **ELISE's 2nd Open Call grants** (link: https://www.elise-ai.eu/events/elise-s-2nd-open-call-grants-funding-to-16-smes-to-develop-ai-based-services-or-applications)

Professional Experience

AI Specialist *December 2024*
ML Cube S.r.l. *Milan, Italy*
Activity: Development AI approaches for trajectory planning.

Freelance consultant *February 2023*
Private client *Milan, Italy*
Activity: Feasibility study about the use of artificial intelligence techniques for transportation management systems.

Freelance developer *March 2012-June 2012*
IISS Ettore Majorana *Seriate (Bg), Italy*
Activity: Design and implementation of a database system for organization and scheduling of remedial courses.

Intern developer *June 2011-July 2011 and January 2012-February 2012*
Poligrafica s.r.l. *Dalmine (Bg), Italy*
Activity: Design and implementation of a mobile application (Android) for building and printing flyers.

Talks, Seminars, and Presentations

Invited Talks and Seminars

Invited Talk *February 2025 (to happen)*
RL Workshop at Mannheim *Mannheim, Germany*
Title: "Improtance Weighting in Reinforcement Learning"

Invited Talk *September 2024*
Universitat Pompeu Fabra (UPF) *Barcelona, Spain*
Title: "Rising Bandits: Recent Advancements and Open Challenges"

Webinar *April 2024*
AI4REALNET Project Dissemination *Online*
Title: "Distributed and Hierarchical Reinforcement Learning"

Invited Talk *February 2024*
38th AAAI Conference on Artificial Intelligence - New Faculty Highlights *Vancouver, Canada (recorded)*
GGS: A++. Title: "Recent Advancements in Inverse Reinforcement Learning"

Invited Talk *December 2023*
1st Symposium on Lifelong Explainable Robot Learning (SYMPLER) *Nürnberg, Germany (delivered online)*
Title: "Explaining Human Intentions through Inverse Reinforcement Learning"

Invited Seminar *May 2023*
AI Seminars - Politecnico di Milano *Milan, Italy*
Title: "Inverse reinforcement learning: a theoretical view".

Invited Talk *September 2022*
ELLIS@Milan Artificial Intelligence Workshop - Bocconi University *Milan, Italy*
Title: "Online Learning in Non-Cooperative Configurable Environments".

Invited Seminar *May 2022*
Università del Piemonte Orientale *Alessandria, Italy*
Title: "Stream Learning in Non-Stationary Environments".

Invited Talk *December 2021*
20th International Conference of the Italian Association for Artificial Intelligence (AIxIA 2021) *Online*
Title: "Exploiting Environment Configurability in Reinforcement Learning".

Invited Seminar *January 2021*
ML Modena Meetup *Online*
Title: "From MAB to RL... and beyond!" (with Francesco Trovò).

Invited Talk *November 2018*
17th International Conference of the Italian Association for Artificial Intelligence (AIxIA 2018) *Trento, Italy*
Title: "Compatible Reward Inverse Reinforcement Learning".

Seminar *November 2017*
Politecnico di Milano - Dipartimento di Elettronica, Informazione e Bioingegneria *Milan, Italy*
Title: "Distributional Reinforcement Learning".

International Conference and Workshop Talks

Conference Talk *July 2023*
The Fortieth International Conference on Machine Learning (ICML 2023) *Honolulu, HI, US*
GGS: A++. Title: "Towards Theoretical Understanding of Inverse Reinforcement Learning".

Conference Talk *April 2023*
The 26th International Conference on Artificial Intelligence and Statistics (AISTATS 2023) *Valencia, Spain*
GGS: A+. Title: "A Tale of Sampling and Estimation in Discounted Reinforcement Learning".

Conference Talk *July 2022*
Thirty-ninth International Conference on Machine Learning (ICML 2022) *Baltimore, MD, US*
GGS: A++. Title: "Stochastic Rising Bandits".

Spotlight Conference Talk *December 2021*
Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS 2021) *Online*
GGS: A++. Title: "Subgaussian and Differentiable Importance Sampling for Off-Policy Evaluation and Learning".

Workshop Talk *December 2021*
Deep Reinforcement Learning Workshop - NeurIPS 2021 *Online*
Title: "Policy Optimization via Optimal Policy Evaluation".

Conference Talk *September 2021*
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD 2021) *Online*
GGS: A. Title: "Policy Space Identification in Configurable Environments".

Conference Talk *July 2021*
Thirty-eighth International Conference on Machine Learning (ICML 2021) *Online*
GGS: A++. Title: "Provably Efficient Learning of Transferable Rewards".

Conference Talk *February 2021*
35th AAAI Conference on Artificial Intelligence (AAAI 2021) *Online*
GGS: A++. Title: "Policy Optimization as Online Learning with Mediator Feedback".

Conference Talk *July 2020*
Thirty-seventh International Conference on Machine Learning (ICML 2020) *Online*
GGS: A++. Title: "Control Frequency Adaptation via Action Persistence in Batch Reinforcement Learning".

Short Conference Talk *June 2019*
Thirty-sixth International Conference on Machine Learning (ICML 2019) *Long Beach, CA, US*
GGS: A++. Title: "Reinforcement Learning in Configurable Continuous Environments".

Long Conference Talk *July 2018*
Thirty-fifth International Conference on Machine Learning (ICML 2018) *Stockholm, Sweden*
GGS: A++. Title: "Configurable Markov Decision Processes".

Poster Presentation at International Conferences and Workshops

He presented his contributions in several international conferences and workshops: NeurIPS 2024 (5 posters - Vancouver, Canada), ICML 2024 (6 posters - Vienna, Austria - to happen), AISTATS 2024 (2 posters - Valencia, Spain), EWRL 2023 (7 posters - Bruxelles, Belgium), ICML 2023 (3 posters - Honolulu, HI, US),

AISTATS 2023 (1 poster - Valencia, Spain), ICML 2022 (2 posters - Baltimore, MD, US), NeurIPS 2021 (2 posters - Online), ICML 2021 (1 poster - Online), AAAI 2021 (1 poster - Online), NeurIPS 2019 (1 poster - Vancouver, Canada), ICML 2019 (2 posters - Long Beach, CA, US), NeurIPS 2018 (1 poster - Montreal, Canada), EWRL 2018 (1 poster - Lille, France), ICML 2018 (1 poster - Stockholm, Sweden), NIPS 2017 (1 poster - Long Beach, CA, US).

Activities and Services[7]

Referee Activities

Member of REPRISE *October 2023-*
Register of Expert Peer Reviewers for Italian Scientific Evaluation - MUR

Expert Reviewer for the Israel Science Foundation *April 2024*
Reviewer for the "Personal Research Grant"

Ph.D. Thesis Reviewer

Ph.D. Thesis Reviewer *April 2023*
PhD Program in Engineering in Computer Science - Sapienza University of Rome
Candidate: Roberto Cipollone. Advisor: Prof. Giuseppe De Giacomo. Thesis: "Markov Representations: Learning in MDP Abstractions and Non-Markovian Environments"

Editorial Activities

Associate Editor *April 2023-*
IEEE Robotics and Automation Letters (RA-L) - SJR: Q1

Academic Editor *July 2024-*
PLOS ONE - SJR: Q1 (Multidisciplinary)

Action Editor *November 2024-*
Transactions of Machine Learning Research (TMLR)

Organization Activities

Publication Chair *July 2025 (to happen)*
41st Conference on Uncertainty in Artificial Intelligence (UAI) *Rio De Janeiro, Brazil*
(link: https://www.auai.org/uai2025/organizing_committee)

Mentor *December 2024*
Women in Machine Learning Workshop (WIML) @ NeurIPS 2024 *Vancouver, BC, Canada*
(link: https://sites.google.com/wimlworkshop.org/wiml-2024/program)

Organizer *July 2024*
Aligning Reinforcement Learning Experimentalists and Theorists (ARLET) @ ICML 2024 *Vienna, Austria*
#Submitted papers: ∼120, Attendance: ∼200
(link: https://arlet-workshop.github.io/)

Session Chair *July 2024*
International Conference on Machine Learning (ICML) - GGS: A++ *Vienna, Austria*
Responsibilities: Chairing a Reinforcement Learning session (4 paper presentations).

Program Chair and Organizer *September 2022*
15th European Workshop on Reinforcement Learning (EWRL 2022) *Milan, Italy*
#Submitted papers: ∼100, Attendance: ∼150
(link: https://ewrl.wordpress.com/ewrl15-2022/)

Session Chair *September 2021*
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases 2021 (ECML-PKDD) - GGS: A *Online*
Responsibilities: Chairing a Reinforcement Learning session (4 paper presentations).

[7] For both journal and conference publications, the rating is the most recent available. For Scimago Ranks (SJR), the "Artificial Intelligence" quartile is reported if no further specification.

Area Chair - (Senior) Program Committee Member - Reviewer for International Conferences

Area Chair *2024-2025*
International Conference on Machine Learning (ICML) - GGS: A++

Area Chair *2024*
Neural Information Processing Systems (NeurIPS) - GGS: A++

Area Chair *2025*
International Conference on Artificial Intelligence and Statistics (AISTATS) - GGS: A+

Senior Reviewer *2024*
Reinforcement Learning Conference (RLC)

Senior Program Committee member *2021*
International Joint Conference on Artificial Intelligence (IJCAI) - GGS: A++

Senior Program Committee member *2022, 2025*
AAAI Conference on Artificial Intelligence (AAAI) - GGS: A++

Program Committee member *2020, 2022*
International Joint Conference on Artificial Intelligence (IJCAI) - GGS: A++

Reviewer *2019-2023*
International Conference on Machine Learning (ICML) - GGS: A++

Reviewer *2019-2023*
Neural Information Processing Systems (NeurIPS) - GGS: A++

Program Committee member *2020-2021,2023*
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD) - GGS: A

Program Committee member *2020-2021,2024*
AAAI Conference on Artificial Intelligence (AAAI) - GGS: A++

Reviewer *2020-2022*
International Conference on Artificial Intelligence and Statistics (AISTATS) - GGS: A+

Reviewer *2021-2024*
International Conference on Learning Representations (ICLR) - GGS: A++

Reviewer for International Workshops

Reviewer *2024*
European Workshop on Reinforcement Learning (EWRL 2024)

Reviewer *2022*
Decision Awareness in Reinforcement Learning Workshop @ ICML 2022 (DARL 2022)

Reviewer *2021*
Reinforcement Learning for Real Life Workshop @ ICML 2021

Reviewer for International Journals

Reviewer *2024*
ACM Computing Surveys - SJR: Q1 (Computer Science (miscellaneous))

Reviewer *2023*
Scientific Report (Nature) - SJR: Q1 (Multidisciplinary)

Reviewer *2023*
PLOS ONE - SJR: Q1 (Multidisciplinary)

Reviewer *2023*
Expert Systems with Applications (ESWA) - SJR: Q1

Reviewer *2023*
IEEE Transactions on Artificial Intelligence (TAI) - SJR: Q1

Reviewer *2023*
IEEE Robotics and Automation Letters (RA-L) - SJR: Q1

Reviewer *2023*
IEEE Transactions on Neural Networks and Learning Systems (TNNLS) - SJR: Q1

Reviewer *2022,2024*
Journal of Machine Learning Research (JMLR) - SJR: Q1

Reviewer *2022-2024*
Transactions on Machine Learning Research (TMLR)

Reviewer *2022*
Engineering Applications of Artificial Intelligence (EAAI) - SJR: Q1

Reviewer *2022*
Entropy (MDPI) - SJR: Q2 (Information Systems)

Reviewer *2021*
Frontiers in Artificial Intelligence - SJR: Q2

Reviewer *2021*
Intelligenza Artificiale - SJR: Q3

Reviewer *2021*
IEEE Transactions on Intelligent Transportation Systems (ITS) - SJR: Q1 (Computer Science Applications)

Reviewer *2019, 2022*
Journal of Artificial Intelligence Research (JAIR) - SJR: Q1

Reviewer *2019*
Machine Learning (Springer) - SJR: Q1

Reviewer *2018*
IEEE Transactions on Cognitive and Developmental Systems (TCDS) - SJR: Q1

Memberships of Scientific Societies

ELLIS Society Member *2021-*
European Laboratory for Learning and Intelligent Systems

CLAIRE Supporter *2023-*
Confederation of Laboratories for Artificial Intelligence Research in Europe

AAAI Member *2020-*
Association for the Advancement of Artificial Intelligence

AIxIA Member *2018-2022*
Associazione Italiana per l'Intelligenza Artificiale

List of Publications[8]

Books

[B1] Alberto Maria Metelli. *Exploiting environment configurability in reinforcement learning*, volume 361 of *Frontiers in Artificial Intelligence and Applications*. IOS Press, 2022.
(link: https://doi.org/10.3233/FAIA361).

[B2] Alberto Maria Metelli and Francesco Trovò. *The machine learning gym. Train and test your skills*. McGraw-Hill Education, 2024.
(link: https://www.mheducation.it/the-machine-learning-gym-9788838612428-italy).

Book Chapters

[H1] Alberto Maria Metelli. "Configurable Environments in Reinforcement Learning: An Overview". In **Special Topics in Information Technology**, pages 101–113, Cham, 2022. Springer International Publishing.
(link: https://doi.org/10.1007/978-3-030-85918-3_9).

Refereed International Journal Articles

[J1] Khaled Eldowa, Nicolo Cesa-Bianchi, Alberto Maria Metelli, and Marcello Restelli. "Information Capacity Regret Bounds for Bandits with Mediator Feedback". **Journal of Machine Learning Research**, 25(353):1–36, 2024. CORE 2020: **A***. SJR 2023: **Q1**.
(link: http://jmlr.org/papers/v25/24-0227.html).

[J2] Alessio Russo, Alberto Maria Metelli, and Marcello Restelli. "Switching Latent Bandits". **Transactions on Machine Learning Research**, 2024.
(link: https://openreview.net/forum?id=4ZGqCXcUqR).

[J3] Gabor Paczolay, Matteo Papini, Alberto Maria Metelli, Istvan Harmati, and Marcello Restelli. "Sample Complexity of Variance-Reduced Policy Gradient: Weaker Assumptions and Lower Bounds". **Machine Learning**, 113:6475–6510, 2024. CORE 2020: **A**. SJR 2023: **Q1**.
(link: https://doi.org/10.1007/s10994-024-06573-4).

[J4] Paolo Bonetti, Alberto Maria Metelli, and Marcello Restelli. "Interpretable linear dimensionality reduction based on bias-variance analysis". **Data Mining and Knowledge Discovery**, 38(4):1713–1781. CORE 2020: **A**. SJR 2023: **Q1** (Computer Science Applications).
(link: https://doi.org/10.1007/s10618-024-01015-0).

[J5] Riccardo Poiani, Ciprian Stirbu, Alberto Maria Metelli, and Marcello Restelli. "Optimizing Empty Container Repositioning and Fleet Deployment via Configurable Semi-POMDPs". **IEEE Transactions on Intelligent Transportation Systems**, 25(5):4704–4711, 2024. SJR 2023: **Q1** (Computer Science Applications).
(link: https://doi.org/10.1109/TITS.2023.3329677).

[J6] Gianluca Drappo, Alberto Maria Metelli, and Marcello Restelli. "An Option-Dependent Analysis of Regret Minimization Algorithms in Finite-Horizon Semi-MDP". **Transactions on Machine Learning Research**, 2023.
(link: https://openreview.net/forum?id=VP9p4u9jAo).

[J7] Filippo Fedeli, Alberto Maria Metelli, Francesco Trovò, and Marcello Restelli. "IWDA: Importance Weighting for Drift Adaptation in Streaming Supervised Learning Problems". **IEEE Transactions on Neural Networks and Learning Systems**, 34(10):6813–6823, 2023. CORE 2020: **A***. SJR 2023: **Q1**.
(link: https://doi.org/10.1109/TNNLS.2023.3265524).

[J8] Marco Mussi, Davide Lombarda, Alberto Maria Metelli, Francesco Trovó, and Marcello Restelli. "ARLO: A framework for Automated Reinforcement Learning". **Expert Systems with Applications**, 224:119883, 2023. CORE 2020: B. SJR 2022: **Q1**.
(link: https://doi.org/10.1016/j.eswa.2023.119883).

[J9] Alberto Maria Metelli. "A Unified View of Configurable Markov Decision Processes: Solution Concepts, Value Functions, and Operators". **Intelligenza Artificiale**, 16(2):165–184, 2022. SJR 2022: Q3. (*Invited publication as winner of the "Premio Neodottori di Ricerca Marco Cadoli 2021"*).
(link: https://doi.org/10.3233/IA-220140).

[8] The first author represents the main contributor; in the case of multiple main contributors (equal contribution), they are marked with *. Alphabetic order of authors is denoted with (α-β order). For both journal and conference publications, the rating is the most recent available in the year of publication. For Scimago Ranks (SJR), the "Artificial Intelligence" quartile is reported if no further specification.

[J10] Alberto Maria Metelli, Guglielmo Manneschi, and Marcello Restelli. "Policy space identification in configurable environments". **Machine Learning**, 111(6):2093–2145, 2022. CORE 2020: **A**. SJR 2022: **Q1**.
(link: https://doi.org/10.1007/s10994-021-06033-3).

[J11] Alberto Maria Metelli, Matteo Pirotta, Daniele Calandriello, and Marcello Restelli. "Safe Policy Iteration: A Monotonically Improving Approximate Policy Iteration Approach". **Journal of Machine Learning Research**, 22(97):1–83, 2021. CORE 2020: **A***. SJR 2021: **Q1**.
(link: http://jmlr.org/papers/v22/19-707.html).

[J12] Amarildo Likmeta, Alberto Maria Metelli, Giorgia Ramponi, Andrea Tirinzoni, Matteo Giuliani, and Marcello Restelli. "Dealing with multiple experts and non-stationarity in inverse reinforcement learning: an application to real-life problems". **Machine Learning**, 110(9):2541–2576, 2021. CORE 2020: **A**. SJR 2021: **Q1**.
(link: https://doi.org/10.1007/s10994-020-05939-8).

[J13] Alberto Maria Metelli, Matteo Papini, Nico Montali, and Marcello Restelli. "Importance Sampling Techniques for Policy Optimization". **Journal of Machine Learning Research**, 21(141):1–75, 2020. CORE 2020: **A***. SJR 2020: **Q1**.
(link: http://jmlr.org/papers/v21/20-124.html).

[J14] Amarildo Likmeta, Alberto Maria Metelli, Andrea Tirinzoni, Riccardo Giol, Marcello Restelli, and Danilo Romano. "Combining reinforcement learning with rule-based controllers for transparent and general decision-making in autonomous driving". **Robotics and Autonomous Systems**, 131:103568, 2020. CORE 2020: B. SJR 2020: **Q1** (Computer Science Applications).
(link: https://doi.org/10.1016/j.robot.2020.103568).

[J15] Alberto Maria Metelli, Matteo Pirotta, and Marcello Restelli. "On the use of the policy gradient and Hessian in inverse reinforcement learning". **Intelligenza Artificiale**, 14(1):117–150, 2020. SJR 2020: Q3. (*Invited publication as winner of the "Premio NeoLaureati Leonardo Lesmo 2018"*).
(link: https://doi.org/10.3233/IA-180011).

Refereed International Conferences Papers

[C1] Alessandro Montenegro, Marco Mussi, Matteo Papini, and Alberto Maria Metelli. "Last-Iterate Global Convergence of Policy Gradients for Constrained Reinforcement Learning". In **Advances in Neural Information Processing Systems (NeurIPS)**. 2024. **Acceptance rate: 25.8%**. CORE 2023: **A***. GGS 2021: **A++**. (*Accepted*).
(link: https://openreview.net/forum?id=2vywag2lVC).

[C2] Riccardo Poiani, Gabriele Curti, Alberto Maria Metelli, and Marcello Restelli. "Sub-optimal Experts mitigate Ambiguity in Inverse Reinforcement Learning". In **Advances in Neural Information Processing Systems (NeurIPS)**. 2024. **Acceptance rate: 25.8%**. CORE 2023: **A***. GGS 2021: **A++**. (*Accepted*).
(link: https://openreview.net/forum?id=7zzOcyT0hd).

[C3] Riccardo Poiani, Rémy Degenne, Emilie Kaufmann, Alberto Maria Metelli, and Marcello Restelli. "Optimal Multi-Fidelity Best-Arm Identification". In **Advances in Neural Information Processing Systems (NeurIPS)**. 2024. **Acceptance rate: 25.8%**. CORE 2023: **A***. GGS 2021: **A++**. (*Accepted*).
(link: https://openreview.net/forum?id=gKMTM1i8Ew).

[C4] Filippo Lazzati, Mirco Mutti, and Alberto Maria Metelli. "How to Scale Inverse RL to Large State Spaces? A Provably Efficient Approach". In **Advances in Neural Information Processing Systems (NeurIPS)**. 2024. **Acceptance rate: 25.8%**. CORE 2023: **A***. GGS 2021: **A++**. (*Accepted*).
(link: https://openreview.net/forum?id=ZjgcYMkCmX).

[C5] (α-β order). Davide Maran, Alberto Maria Metelli, Matteo Papini, and Marcello Restelli. "Local Linearity: the Key for No-regret Reinforcement Learning in Continuous MDPs". In **Advances in Neural Information Processing Systems (NeurIPS)**. 2024. **Acceptance rate: 25.8%**. CORE 2023: **A***. GGS 2021: **A++**. (*Accepted*).
(link: https://openreview.net/forum?id=QEmsZoQ45M).

[C6] Paolo Bonetti, Alberto Maria Metelli, and Marcello Restelli. "Interpetable Target-Feature Aggregation for Multi-Task Learning based on Bias-Variance Analysis". In **European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD)**, volume 14946, pages 74–91. Springer, 2024. **Acceptance rate: 14%**. CORE 2023: A. GGS 2021: A.
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