Matteo Papini

Assistant Professor

Contact Information

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Highlights

Matteo Papini is an **Assistant Professor (RTD-A)** at **Politecnico di Milano**, Milan, Italy, in the Artificial Intelligence and Robotics Lab. His research is directed towards the development of intelligent systems, with a focus on the problem of *sequential decision making under uncertainty*, using the theory and algorithmic solutions of **reinforcement learning**. In 2021 he earned a PhD in Information Technology (cum laude) from Politecnico di Milano, Milan, Italy, under the supervision of Marcello Restelli, with a dissertation on safe policy optimization. In 2020 he worked as a student research intern at **Facebook AI Research** (now Meta). From 2021 to 2023 he was a postdoctoral researcher in the Artificial Intelligence and Machine Learning Research Group of **Universitat Pompeu Fabra** (UPF), Barcelona, Spain, in Gergely Neu's team.

He has authored more than 20 peer-reviewed conference papers, including publications at top artificial intelligence and and machine learning conferences such as **NeurIPS (7 papers), ICML (5), COLT (2), AAAI (2) and IJCAI (2)**. Of these, one was awarded an oral presentation at NeurIPS 2018, which was only granted to the top 3% of the accepted papers. Moreover, he has published peer-reviewed manuscripts at renowned peer-reviewed machine learning journals: **JMLR (1)** and **Springer's Machine Learning (2)**.

He is a member of *ELLIS* (European Laboratory for Learning and Intelligent Systems) since 2022. He has worked as a teaching assistant for several classes at Politecnico di Milano and for two international reinforcement learning summer schools. He has served as **area chair for NeurIPS** 2024 as is an **action editor of TMLR** since 2024. He served as a reviewer in the program committee of several conferences (NeurIPS, ICML, COLT, AAAI...) since 2019. In 2023, with Vincent Adam (UPF), he **organized RLSS 2023** (Reinforcement Learning Summer School) in Barcelona. With Giulia Clerici (University of Milan) he is **local chair of ALT** 2025 (International Conference on Algorithmic Learning Theory) to be held in Milan.

Faculty and Research Positions

2023–present **Assistant Professor (RTDA)**, *Politecnico di Milano*, Milan, Italy

2021–2023 **Postdoctoral researcher**, *Universitat Pompeu Fabra*, Barcelona

Mar-Apr 2021 **Research Assistant** (Attività di Supporto alla Ricerca), *Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano*, Milan, Italy
Research Topic: Reinforcement Learning Techniques for Developing Artificial Test Drivers on a F1 Simulator, Principal Investigator: Marcello Restelli

Sep-Dec 2020 **Research Intern at Facebook AI Research**, working (remotely) with the Paris FAIR team, under the supervision of Matteo Pirotta. Research topic: representation learning for contextual bandits. The project led to the publication of a paper at ICML 2021 [C3]

2017–2021 **Research Assistant** (Assegno di Ricerca), *Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano*, Milan, Italy
Research topic: *Study and Development of Reinforcement Learning Techniques in Industrial Settings*, Principal Investigator: Marcello Restelli.

Education

2017–2021 **Ph.D., Ingegneria dell'Informazione / Information Technology**, Politecnico di Milano, Milan, Italy
Supervisor: Prof. Marcello Restelli
Dissertation: *Safe Policy Optimization* (`http://hdl.handle.net/10589/170196`)
Awarded cum laude
Date of degree: March 11, 2021

2015–2017 **M.Sc., Computer Science and Engineering - Ingegneria Informatica**, *Politecnico di Milano, Milan, Italy*
Master Thesis: *Adaptive Batch Size for Safe Policy Gradient Methods*, supervised by Prof. Marcello Restelli
Final mark: 110/110 cum laude
Date of degree: July 27, 2017

2012–2015 **B.Sc., Ingegneria Informatica (Computer Engineering)**, *Politecnico di Milano, Milan, Italy*
Final mark: 110/110 cum laude
Date of degree: July 24, 2015

2007–2012 **High School Diploma (Liceo Scientifico PNI)**, *Ist. Istr. Sup. P.L. Nervi*, Morbegno (SO), Italy, Final mark: 100/100
This school ranked first in Italy for several years according to Eduscopio (`https://eduscopio.it/`)

Author Profile

Google Scholar **h-index 13**, `https://scholar.google.it/citations?user=A2WxZlsAAAAJ`

Scopus `https://www.scopus.com/authid/detail.uri?authorId=57202057824`

dblp `https://dblp.uni-trier.de/pid/209/4897.html`

Summary of Publications

Journal/Conference	# Papers	Rating	Homepage
JMLR	1	Scimago Q1, CORE A*	http://www.jmlr.org/
Machine Learning	2	Scimago Q1, CORE A	https://www.springer.com/journal/10994
NeurIPS	7	CORE A*, GGS A++	https://nips.cc/
ICML	5	CORE A*, GGS A++	https://icml.cc/
AAAI	2	CORE A*, GGS A++	https://aaai.org/Conferences/AAAI-23/
IJCAI	2	CORE A*, GGS A++	https://www.ijcai.org/
COLT	2	CORE A*, GGS A+	https://learningtheory.org/
AISTATS	2	CORE A, GGS A+	https://aistats.org/
IJCNN	1	CORE B, GGS A-	https://2023.ijcnn.org/
ALT	2	CORE B, GGS B	http://algorithmiclearningtheory.org/

Selected Publications (12)

[1] **M. Papini**, D. Binaghi, G. Canonaco, M. Pirotta, M. Restelli: *Stochastic variance-reduced policy gradient.* **ICML** (2018) — **CORE A*, GGS A++**

[2] A.M. Metelli, **M. Papini**, F. Faccio, M. Restelli: *Policy optimization via importance sampling.* **NeurIPS (oral, top 3%)** (2018) — **CORE A*, GGS A++**

[3] L. Bisi, L. Sabbioni, E. Vittori, **M. Papini**, M. Restelli: *Risk-averse trust region optimization for reward-volatility reduction.* **IJCAI** (2020) — **CORE A*, GGS A++**

[4] A.M. Metelli, **M. Papini**, N. Montali, M. Restelli: *Importance Sampling Techniques for Policy Optimization.* **Journal of Machine Learning Research (JMLR)** 21.141 (2020) — **Scimago Q1**

[5] **M. Papini**, M. Pirotta, M. Restelli: *Adaptive batch size for safe policy gradients.* **NeurIPS** (2017) — **CORE A*, GGS A++**

[6] P. D'Oro, A. M. Metelli, A. Tirinzoni, **M. Papini**, M. Restelli: *Gradient-aware model-based policy search.* **AAAI** (2020) — **CORE A*, GGS A++**

[7] **M. Papini**, A.M. Metelli, L. Lupo, M. Restelli: *Optimistic policy optimization via multiple importance sampling.* **ICML** (2019) — **CORE A*, GGS A++**

[8] **M. Papini**, M. Pirotta, M. Restelli: *Smoothing policies and safe policy gradients.* Springer's **Machine Learning** (2022) — **Scimago Q1**

[9] **M. Papini**, A. Tirinzoni, M. Restelli, A. Lazaric, M. Pirotta: *Leveraging good representations in linear contextual bandits.* **ICML** (2021) — **CORE A*, GGS A++**

[10] **M. Papini**, A. Tirinzoni, A. Pacchiano, M. Restelli, A. Lazaric, M. Pirotta: *Reinforcement learning in linear mdps: Constant regret and representation selection.* **NeurIPS** (2021) — **CORE A*, GGS A++**

[11] G. Neu, J. Olkhovskaya, **M. Papini**, L. Schwartz: *Lifting the Information Ratio: An Information-Theoretic Analysis of Thompson Sampling for Contextual Bandits.* **NeurIPS** (2022) — **CORE A*, GGS A++**. (authors in alphabetical order)

[12] G. Paczolay., **M. Papini**, A. M. Metelli, I. Harmati, M. Restelli: *Sample complexity of variance-reduced policy gradient: weaker assumptions and lower bounds.* Springer's **Machine Learning** (2024) — **Scimago Q1**

Awards, Grants, Scholarships, and other Recognitions

Nov 16, 2022 **Recipient of Ayudas Juan de la Cierva-Formación 2021**, *research grant for postdoctoral researchers instructed by the Spanish research agency (Agencia Estatal de Investigación), funded by NextGenerationEU*
Role: researcher (Investigador). Ranked third in national call for the area of Information and Communication Technologies. Total amount granted for 2 years: 64.800€
https://www.aei.gob.es/convocatorias/buscador-convocatorias/ayudas-contratos-juan-cierva-formacion-2021

Feb 2022 **Member of ELLIS** , *https://ellis.eu/*

2021 **Neurips outstanding reviewer award**, *top 8%*

2020 **ICML top reviewer** certificate of appreciation, *top 33%*

2019 **ICML travel award**, *$1300 USD*

2018 **Oral presentation at NeurIPS**, *top 3%*

2018 **Neurips travel award**, *$1000 USD*

2018 **ICML travel award**, *$1500 USD*

2017 **Neurips travel award**, *$1200 USD*

Funded Projects

2024-present **Principal Investigator**, *CC Auto Tune: ottimizzazione automatica dei parametri del Performance Controller per Compressori Centrifughi*, with MADE (Competence Center for Industry 4.0) and Baker Hughes.
Industrial research project.

2023-present **Research Scientist**, *Artificial Intelligence Foundations for Sequential Decision Making*
Extended Partnership - Future Artificial Intelligence Research (FAIR). National Recovery and Resilience Plan, Mission 4 "Education and research" - Component 2 "From research to business" - Investment 1.3, funded by the European Union - NextGenerationEU
Principal Investigator: Nicola Gatti

2021-2022 **Research Scientist**, *Provably Efficient Algorithms for Large-Scale Reinforcement Learning*
ERC (Grant agreement No. 950180)
Principal Investigator: Gergely Neu

2021 **Research Scientist**, *Reinforcement learning techniques for developing artificial test drivers on a F1 simulator*, Ferrari
Industrial project.
Principal Investigator: Marcello Restelli

2017-2019 **Research Scientist**, *TOTAL EFFICIENCY 4.0, (POR FESR)*
In collaboration with Pirelli Tyre S.p.A.
Principal Investigator: Marcello Restelli

Organization of Scientific Events

2025 **International Conference on Algorithmic Learning Theory (ALT)**, *Politecnico di Milano, Milan, Italy. Role: Local Chair (to be announced)*, `http://algorithmiclearningtheory.org/`

2023 **Reinforcement Learning Summer School (RLSS)**, *June 28–july 5 2023, Universitat Pompeu Fabra, Barcelona, Spain. Role: Main Organizer (co-organized with Vincent Adam)*, `https://rlsummerschool.com/`

2023 **ELLIS Pre-NeurIPS Fest**, *December 4 2023, ELLIS Unit of Milan. Role: co-organizer*, `https://www.ellismilan.eu/2023/12/05/ellis-pre-neurips-fest-2023-in-milan/`

Invited Talks

Jan 12, 2024 **Invited talk at the "Mini-Workshop on Reinforcement Learning"**, *University of Mannheim, Germany*

May 25, 2023 **Invited talk at the Theory of Reinforcement Learning Workshop**, *University of Alberta, Edmonton, Canada*, titled "Offline Primal-Dual Reinforcement Learning for Linear MDPs"

May 11, 2023 **Invited talk at the AI Seminars**, *Politecnico di Milano, Milan, Italy*, titled "Large-Scale Offline Reinforcement Learning"

Sep 16, 2022 **Invited talk at the Reinforcement Learning Conference**, *Technische Universität Dresden, Dresden, Germany*, titled "Lifting the Information Ratio"

Jul 1, 2021 **Invited talk at Mathematical Statistics and Learning**, *Barcelona Graduate School of Economics, Barcelona, Spain*, titled "Leveraging Good Representations in Linear Contextual Bandits and MDPs"

Nov 6, 2020 **Invited talk at Gerhard Neumann's research seminar**, *Karlsruhe Institute of Technology (delivered online)*, titled "Safe Policy Optimization"

Sep 19, 2019 **Invited talk at the Workshop on Markets, Algorithms, Prediction and LEarning (MAPLE)**, *Politecnico di Milano, Milan, Italy*, titled "Optimistic Policy Optimization via Multiple Importance Sampling"

Teaching Experience

2024 **Teaching Assistant**, *Politecnico di Milano, Milan, Italy*
Informatica (computer science for civil engineering students), resp. Prof. Marcello Restelli, 24 hours, II semester 2023/2024

2024 **Teaching Assistant**, *Politecnico di Milano, Milan, Italy*
Machine Learning, resp. Prof. Marcello Restelli, 20 hours, II semester 2023/2024

2023 **Teaching Assistant**, *Politecnico di Milano, Milan, Italy*
Foundations of Artificial Intelligence, resp. Prof. Francesco Amigoni and Pierluca Lanzi, 16 hours, I semester 2023/2024

11-15 Jul 2022 **Teaching Assistant**, *Reinforcement Learning Summer School, Vrije Universitet Amsterdam, Amsterdam, the Netherlands*
Role: delivered a tutorial on implementing policy-gradient algorithms with JAX, tutored students in practical sessions.

2022 **Teaching Assistant**, *Politecnico di Milano, Milan, Italy*
Intelligenza Artificiale (Artificial Intelligence — online class), resp. Prof. Andrea Bonarini, 6 hours, attività di didattica integrativa, II semester 2021/2022

2021 **Teaching Assistant**, *Politecnico di Milano, Milan, Italy*
Intelligenza Artificiale (Artificial Intelligence — online class), resp. Prof. Andrea Bonarini, 6 hours, attività di didattica integrativa, II semester 2020/2021

2020 **Teaching Assistant**, *Politecnico di Milano, Milan, Italy*
Intelligenza Artificiale (Artificial Intelligence — online class), resp. Prof. Andrea Bonarini, 6 hours, attività di didattica integrativa, II semester 2019/2020

2019 **Teaching Assistant**, *Politecnico di Milano, Milan, Italy*
Informatica B (computer science for mechanical engineering students), resp. Prof. Luca Cassano, 26 hours, attività di didattica integrativa (esercitatori), I semester 2019/2020

2018 **Teaching Assistant**, *Politecnico di Milano, Milan, Italy*
Informatica B (computer science for mechanical engineering students), resp. Prof. Luca Cassano, 28 hours, attività di didattica integrativa (esercitatori), I semester 2018/2019

1-12 Jul 2019 **Teaching Assistant**, *Reinforcement Learning Summer School, Inria Lille-Nord Europe, Lille, France*, Role: tutored students in practical sessions

2018 **Teaching Assistant**, *Politecnico di Milano (Polo Territoriale di Como), Como, Italy*
Web and Internet Economics, resp. Prof. Nicola Gatti, 10 hours, *attività di didattica integrativa (esercitatori), II semester 2017-2018*

2017 **Lab Assistant**, *Politecnico di Milano, Milan, Italy*
Informatica B (computer science for mechanical engineering students), resp. Prof. Luca Cassano, 9 hours, attività di didattica integrativa sperimentale (ex responsabili di laboratorio), I semester 2017-2018

2016 **Lab Tutor**, *Politecnico di Milano, Milan, Italy*
Prova Finale–Ingegneria del Software (software engineering: final project), resp. Prof. Carlo Ghezzi, 32 hours, *attività di tutorato (ex tutor di laboratorio), II semester 2015/2016*

Participation on Committees

June 27 2024 **Committee member for PhD defense**, *PhD program in Information Technology, Politecnico di Milano*

May 2024 **Committee member for assignment of industrial research funding**, *Bando a cascata del progetto "Future Artificial Intelligence Research – FAIR", (Bando Imprese), codice PE0000013, PNRR, Missione 4, Componente 2, Investimento 1.3 (nominated)*

Dec 19 2023 **Committee member for degree examination**, *M. Sc. in Computer Science and Enginnering, Politecnico di Milano*

Mar 30 2023 **Board member for the Thesis Proposal Defenses** , *PhD program in Information and Communication Technologies, Universitat Pompeu Fabra, Barcelona, Spain*

2023 **Jury Member for the CLAIRE R2Net 2022 Papers Highlights**

2021, 2022 **Evaluator** for the pre-screening of applicants to the ELLIS PhD program

July 5 2022 **Jury member for the undergraduate thesis defenses** , *Universitat Pompeu Fabra, Barcelona, Spain*

Mar 17 2022 **Board member for the Thesis Proposal Defense** , *PhD program in Information and Communication Technologies, Universitat Pompeu Fabra, Barcelona, Spain*

Editorial Activities

2024-present **Action Editor** for Transactions on Machine Learning Research (TMLR)

2024 **Area Chair** for NeurIPS

2024-present **Expert reviewer** for Transactions on Machine Learning Research (TMLR)

2024 Reviewer for ICML, COLT, Senior Reviewer for RLC (Reinforcement Learning Conference)

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

2023 Reviewer for ICML, COLT, EWRL, NeurIPS, ICLR, AISTATS

2022 Reviewer for IEEE Transactions on Automatic Control (TACON)

2022 Reviewer for ICML, NeurIPS, EWRL

2021 **Outstanding Reviewer** (top 8%) for NeurIPS, **expert reviewer** for ICML, reviewer for AISTATS, emergency reviewer for AAAI

2020 **Top 33% reviewer** for ICML, reviewer for NeurIPS, AISTATS, AAAI, UAI, ECAI

2019 Reviewer for ICML, NeurIPS, UAI

Attendance to Conferences and Workshops

2024 **ICML**, *Vienna, Austria*, 2 posters (planned)

2024 **AISTATS**, *Valencia, Spain*, 1 poster

2024 **ALT**, *San Diego, USA*, 1 poster

2024 **Mini Workshop on Reinforcement Learning**, *Mannheim, Germany*, 1 invited talk

2023 **EWRL 16**, *Brussels, Belgium*, 2 posters

2023 **AISTATS**, *Valencia, Spain*

2023 **Upper Bound**, *Edmonton, Canada*, invited talk at the RL Theory Workshop

2023 **ALT**, *Singapore*, attended as co-author and served as **session chair**

2022 **NeurIPS**, *New Orleans, USA*, presented 2 posters in poster sessions

2022 **ELLIS ILIR Workshop**, *Feldberg, Germany*

2022 **EWRL 15**, *Milan, Italy*, presented 2 posters in poster sessions

2022 **Reinforcement Learning Conference**, *Dresden, Germany*, invited talk

2022 **ICML-2022 Workshop on Complex Feedback in Online Learning**, *Baltimore, USA*, presented 1 poster in poster session

2021 **NeurIPS**, *online edition*, presented 1 poster in online poster session and recorded 1 spotlight talk

2021 **Mathematical Statistics and Learning**, *Barcelona, Spain*, invited talk

2021 **ICML**, *online edition*, presented 1 poster in online poster session and recorded 1 talk

2021 **AAAI**, *online edition*, presented 1 poster in online poster session

2021 **IJCAI**, *online edition*, presented 1 poster in online poster session

2020 **NeurIPS**, *online edition*, attended online

2020 **AISTATS**, *online edition*, recorded 1 talk

2019 **Workshop MAPLE**, *Milan, Italy*, invited talk

2019 **ICML**, *Long Beach, USA*, presented 1 poster and delivered 1 oral presentation

2018 **NeurIPS**, *Montreal, Canada*, presented 1 poster and delivered 1 oral presentation

2018 **EWRL 14**, *Lille, France*, presented 1 poster

2018 **ICML**, *Stockholm, Sweden*, presented 1 poster and delivered 1 oral presentation

2017 **NeurIPS**, *Long Beach, USA*, presented 1 poster

Attendance to Summer Schools and Exchange Programs

Jul 24–Aug 2 2018 **CIFAR Deep Learning and Reinforcement Learning Summer School**, Toronto, Canada, presented 1 poster

7-14 Oct 2017 **ACAI Summer School on Reinforcement Learning**, Nieuwpoort, Belgium

Autumn 2016 **Erasmus Programme**, KTH Royal Institute of Technology, Stockholm, Sweden

Student Supervision and Mentoring

Supervision of PhD Students

2023-present **Alessandro Montenegro**, Information Technology, Politecnico di Milano
Co-supervisor with Alberto Maria Metelli

2024-present **Andrea Menta**, Information Technology, Politecnico di Milano

Supervision of Master Students

2023-present **Currently (co-)supervising 5+ master students**, Politecnico di Milano

Co-supervision/Mentoring

2023-present **5+ PhD students**, Politecnico di Milano

2021-2023 **3 PhD students**, Universitat Pompeu Fabra, Barcelona

2018-2020 **8 master students**, Politecnico di Milano
Correlatore of 8 deposited M.Sc. theses.

Complete List of Papers

Journal Papers

[J1] G. Paczolay, M. Papini, A. M. Metelli, I. Harmati, and M. Restelli. Sample Complexity of Variance-Reduced Policy Gradient: Weaker Assumptions and Lower Bounds. Machine Learning, 1-36 2024, (`https://doi.org/10.1007/s10994-024-06573-4`)

[J2] M. Papini, M. Pirotta, and M. Restelli. Smoothing policies and safe policy gradients. Machine Learning, 2022, 1-57 (`https://rdcu.be/c0a7S`)

[J3] A. M. Metelli, M. Papini, N. Montali, M. Restelli. Importance Sampling Techniques for Policy Optimization. Journal of Machine Learning Research (JMLR) 21.141., pp. 1-75, 2020

Conference Papers

[C1] A. Montenegro, M. Mussi, M. Papini, and A. Metelli. Last-iterate global convergence of policy gradients for constrained reinforcement learning. In *NeurIPS*, 2024 (to appear).

[C2] D. Maran, M. Alberto Maria, M. Papini, and M. Restelli. Local linearity: the key for no-regret reinforcement learning in continuous mdps. In *NeurIPS*, 2024 (to appear).

[C3] M. Papini, G. Manganini, A. M. Metelli, and M. Restelli. Policy gradient with active importance sampling. *Presented at the Reinforcement Learning Conference (RLC), Amherst Massachusetts, August 9–12, 2024. . Reinforcement Learning Journal*, 2:645–675, 2024.

[C4] G. Neu, M. Papini, and L. Schwartz. Optimistic information directed sampling. In *COLT*, volume 247 of *Proceedings of Machine Learning Research*, pages 3970–4006. PMLR, 2024.

[C5] A. Montenegro, M. Mussi, A. M. Metelli, and M. Papini. Learning optimal deterministic policies with stochastic policy gradients. In *ICML*. OpenReview.net, 2024.

[C6] D. Maran, A. M. Metelli, M. Papini, and M. Restelli. Projection by convolution: Optimal sample complexity for reinforcement learning in continuous-space mdps. In *COLT*, volume 247 of *Proceedings of Machine Learning Research*, pages 3743–3774. PMLR, 2024.

[C7] D. Maran, A. M. Metelli, M. Papini, and M. Restelli. No-regret reinforcement learning in smooth mdps. In *ICML*. OpenReview.net, 2024.

[C8] G. Gabbianelli, G. Neu, M. Papini, and N. Okolo. Offline primal-dual reinforcement learning for linear mdps. In *AISTATS*, volume 238 of *Proceedings of Machine Learning Research*, pages 3169–3177. PMLR, 2024.

[C9] G. Gabbianelli, G. Neu, and M. Papini. Importance-weighted offline learning done right. In *ALT*, volume 237 of *Proceedings of Machine Learning Research*, pages 614–634. PMLR, 2024.

[C10] F. Bacchiocchi, F. E. Stradi, M. Papini, A. M. Metelli, and N. Gatti. Online learning with off-policy feedback in adversarial mdps. In K. Larson, editor, *Proceedings of the Thirty-Third International Joint Conference on Artificial Intelligence, IJCAI-24*, pages 3697–3705. International Joint Conferences on Artificial Intelligence Organization, 8 2024. Main Track.

[C11] G. Gabbianelli, G. Neu, and M. Papini. Online learning with off-policy feedback. In *ALT*, volume 201 of *Proceedings of Machine Learning Research*, pages 620–641. PMLR, 2023.

[C12] A. Tirinzoni, M. Papini, A. Touati, A. Lazaric, and M. Pirotta. Scalable representation learning in linear contextual bandits with constant regret guarantees. *Advances in Neural Information Processing Systems*, 35:2307–2319, 2022.

[C13] G. Neu, I. Olkhovskaia, M. Papini, and L. Schwartz. Lifting the information ratio: An information-theoretic analysis of thompson sampling for contextual bandits. *Advances in Neural Information Processing Systems*, 35:9486–9498, 2022.

[C14] M. Papini, A. Tirinzoni, M. Restelli, A. Lazaric, and M. Pirotta. Leveraging good representations in linear contextual bandits. In *ICML*, volume 139 of *Proceedings of Machine Learning Research*, pages 8371–8380. PMLR, 2021.

[C15] M. Papini, A. Tirinzoni, A. Pacchiano, M. Restelli, A. Lazaric, and M. Pirotta. Reinforcement learning in linear mdps: Constant regret and representation selection. In *NeurIPS*, pages 16371–16383, 2021.

[C16] A. M. Metelli, M. Papini, P. D'Oro, and M. Restelli. Policy optimization as online learning with mediator feedback. In *AAAI*, pages 8958–8966. AAAI Press, 2021.

[C17] M. Papini, A. Battistello, and M. Restelli. Balancing learning speed and stability in policy gradient via adaptive exploration. In *AISTATS*, volume 108 of *Proceedings of Machine Learning Research*, pages 1188–1199. PMLR, 2020.

[C18] P. D'Oro, A. M. Metelli, A. Tirinzoni, M. Papini, and M. Restelli. Gradient-aware model-based policy search. In *AAAI*, pages 3801–3808. AAAI Press, 2020.

[C19] L. Bisi, L. Sabbioni, E. Vittori, M. Papini, and M. Restelli. Risk-averse trust region optimization for reward-volatility reduction. In *IJCAI*, pages 4583–4589. ijcai.org, 2020.

[C20] M. Papini, A. M. Metelli, L. Lupo, and M. Restelli. Optimistic policy optimization via multiple importance sampling. In *ICML*, volume 97 of *Proceedings of Machine Learning Research*, pages 4989–4999. PMLR, 2019.

[C21] M. Beraha, A. M. Metelli, M. Papini, A. Tirinzoni, and M. Restelli. Feature selection via mutual information: New theoretical insights. In *IJCNN*, pages 1–9. IEEE, 2019.

[C22] M. Papini, D. Binaghi, G. Canonaco, M. Pirotta, and M. Restelli. Stochastic variance-reduced policy gradient. In *ICML*, volume 80 of *Proceedings of Machine Learning Research*, pages 4023–4032. PMLR, 2018.

[C23] A. M. Metelli, M. Papini, F. Faccio, and M. Restelli. Policy optimization via importance sampling. In *NeurIPS*, pages 5447–5459, 2018.

[C24] M. Papini, M. Pirotta, and M. Restelli. Adaptive batch size for safe policy gradients. In *NeurIPS*, pages 3591–3600, 2017.

Workshop Papers

[W1] G. Neu, M. Papini, L. Schwartz. Optimistic Information Directed Sampling. FoRLaC (Foundations of Reinforcement Learning and Control) workshop at ICML, Vienna, Austria, 2024.

[W3] F. Bacchiocchi, F. E. Stradi, M. Papini, A. M. Metelli, N. Gatti. Online Adversarial MDPs with Off-Policy Feedback and Known Transitions. 16th European Workshop on Reinforcement Learning, Brussels, Belgium, 2023

[W4] G. Gabbianelli, G. Neu, N. Okolo, M. Papini. Offline Primal-Dual Reinforcement Learning for Linear MDPs. 16th European Workshop on Reinforcement Learning, Brussels, Belgium, 2023

[W5] G. Neu, J. Olkhovskaya, M. Papini and L. Schwartz. Lifting the Information Ratio: An Information-Theoretic Analysis of Thompson Sampling for Contextual Bandits. 15th European Workshop on Reinforcement Learning, Milan, Italy, 2022

[W6] A. Tirinzoni, M. Papini, A. Touati, A. Lazaric, and M. Pirotta. Scalable Representation Learning in Linear Contextual Bandits with Constant Regret Guarantees. 15th European Workshop on Reinforcement Learning, Milan, Italy, 2022

[W7] G. Gabbianelli, M. Papini, G. Neu. Online Learning with Off-Policy Feedback. ICML-2022 workshop on Complex Feedback in Online Learning, Baltimore, USA, 2022

[W8] A. Gianola, M. Montali, and M. Papini. Automated Reasoning for Reinforcement Learning Agents in Structured Environments. OVERLAY workshop on fOrmal VERification, Logic, Automata and sYnthesis, Padova, Italy, 2021

[W9] M. Papini, A. Tirinzoni, A. Pacchiano, M. Restelli, A. Lazaric, and M. Pirotta. Reinforcement Learning in Linear MDPs: Constant Regret and Representation Selection. ICML Workshop on Reinforcement Learning Theory, virtual, 2021

[W10] M. Papini, A. Battistello, and M. Restelli. Safe Exploration in Gaussian Policy Gradient. NeurIPS-2019 Workshop on Safety and Robustness in Decision Making, Vancouver, Canada, 2019

[W11] M. Papini, A. Battistello, and M. Restelli. Safely Exploring Policy Gradient. 14th European Workshop on Reinforcement Learning, Lille, France, 2018

Papers In Preparation

[P3] With G. Tedeschi, A. M. Metelli, M. Restelli. Search or Split: Policy Gradient with Adaptive Policy Spaces. 2024.

[P1] With L. Civitavecchia. Exploration-Free Reinforcement Learning with Linear Function Approximation. 2024.

[P3] With R. Poiani, A. M. Metelli, M. Restelli. Truncating Trajectories in Monte Carlo Reinforcement Learning: an Overview 2024.

[P4] With G. Paczolay, A. M. Metelli, I. Harmati, M. Restelli. Stabilizing Policy Gradient with Active Importance Sampling. 2024.

[P4] With M. Molaei, G. Paczolay, A. M. Metelli, I. Harmati, M. Restelli. Actor-Critic with Active Importance Sampling. 2024.

[P1] With M. Molaei, A. M. Metelli, M. Restelli. Statistical Analysis of the Policy Space Compression Problem. 2024.

Languages

Italian, *native speaker*

English, *fluent (Cambridge FCE, Grade A — C1 CEFR level)*

Spanish, *intermediate (completed course of level B1 at UPF Barcelona)*

Programming Languages

Python (several research projects) including experience with deep learning libraries **TensorFlow** and **PyTorch**, **LaTeX** (typesetting of several manuscripts), **C++** (one research project, one mobile robotics project as master student), **C, MATLAB** (taught as TA), **Java** (final project of B.Sc.).

Hobbies

Climbing, piano.