

# Andrea Tirinzoni

*Postdoctoral Researcher at INRIA Lille - SCOOL Team*

*Research Center of Inria Lille - Nord Europe*

*40, Avenue du Halley, 59650 Villeneuve d'Asq, France*

✉ [andrea.tirinzoni@inria.fr](mailto:andrea.tirinzoni@inria.fr)

📄 [andreatirinzoni.github.io](https://github.com/andreatirinzoni)

## Work Experience

- Present **Postdoctoral Researcher**, *INRIA - SCOOL Team*, Lille, France.  
Apr 2021 *Research Topics*: Reinforcement Learning
- Apr 2020 **Research Intern**, *Facebook AI Research*, Paris, France.  
Jan 2020 *Research Topics*: Exploration-exploitation in structured bandits  
*Supervisor*: Alessandro Lazaric
- May 2017 **Research Assistant**, *Purposeful Prediction Laboratory, University of Illinois at Chicago*.  
Jan 2017 *Research Topics*: Inverse Reinforcement Learning, Robust Control, Adversarial Prediction  
*Supervisor*: Brian Ziebart
- Aug 2011 **Internship**, *Bankadati Credito Valtellinese*, Sondrio, Italy.  
Jun 2011 System and network administration

## Education

- Mar 2021 **Ph.D. cum laude in Computer Science**, *Politenico di Milano*, Milan, Italy.  
*Thesis*: "Exploiting Structure for Transfer in Reinforcement Learning"  
*Advisor*: Marcello Restelli
- Oct 2017 **M.Sc. in Computer Science and Engineering**, *Politenico di Milano*, Milan, Italy.  
*Final Mark*: 110/110 summa cum laude  
*Thesis*: "Adversarial Imitation Learning under Covariate Shift"  
*Advisor*: Marcello Restelli
- Aug 2017 **M.Sc. in Computer Science**, *University of Illinois at Chicago*, Chicago, Illinois.  
*Final GPA*: 4.0/4  
*Thesis*: "Adversarial Inverse Reinforcement Learning with Changing Dynamics"  
*Advisor*: Brian Ziebart.
- Jul 2015 **B.Sc. in Computer Engineering**, *Politenico di Milano*, Milan, Italy.  
*Final Mark*: 110/110 summa cum laude

## Awards, Scholarships, and Grants

- From 2019 Reviewer awards: top 50% NeurIPS 2019 reviewers, top 33% ICML 2020 reviewers, outstanding reviewer award at ICLR 2021, top 8% NeurIPS 2021 reviewers
- 2018 - 2019 Travel awards: ICML 2018, 2019, NeurIPS 2018
- Jul 2017 Ph.D. scholarship granted by the Italian Ministry of Education, University and Research
- Jun 2017 Scholarship "Tesi all'estero" for the best students doing a master's thesis in a foreign country
- Jul 2016 UIC scholarship for the best Italian graduate student in Computer Science
- May 2016 Scholarship "SEM" for the best students that are residents in Valtellina
- May 2014 Scholarship "SEM" for the best students that are residents in Valtellina

## Teaching

- Dec 2021 **Teaching Assistant**, *Reinforcement Learning*, ENS Paris-Saclay, Paris, France.
- Sep 2021 Master MVA (Mathématiques, Vision, Apprentissage)  
*Lecturer*: Matteo Pirota

- Dec 2019 **Teaching Assistant**, *INFORMATICA*, Politenico di Milano, Milan, Italy.
- Sep 2019 Bachelor's degree in Civil Engineering  
*Lecturer*: Marcello Restelli  
*Topics*: C and Fortran programming
- July 2019 **Teaching Assistant**, *Reinforcement Learning Summer SCOOL*, Inria, Lille, France.
- July 2019 *Topics*: Reinforcement Learning and Bandits
- Dec 2018 **Laboratory Assistant**, *INFORMATICA B*, Politenico di Milano, Milan, Italy.
- Sep 2018 Bachelor's degree in Mechanical Engineering  
*Lecturer*: Luca Cassano  
*Topics*: C and MATLAB programming
- June 2018 **Teaching Assistant**, *Web and Internet Economics*, Politenico di Milano, Milan, Italy.
- Mar 2018 Master's degree in Computer Science and Engineering  
*Lecturer*: Nicola Gatti  
*Topics*: Markov Decision Processes, Reinforcement Learning, Multi-armed Bandits
- Dec 2017 **Laboratory Assistant**, *INFORMATICA B*, Politenico di Milano, Milan, Italy.
- Sep 2017 Bachelor's degree in Mechanical Engineering  
*Lecturer*: Luca Cassano  
*Topics*: C and MATLAB programming

## Schools

- July 2019 **Machine Learning Summer School (MLSS)**, *UCL*, London, England.
- July 2019 **Reinforcement Learning Summer SCOOL (RLSS)**, *Inria*, Lille, France.

## Student Supervision

- Mar 2021 **Thesis Supervision**, I have supervised more than 15 MS theses, including research projects and industrial collaborations, on topics related to transfer/meta RL, exploration in RL, model-based RL, policy search, risk-averse & robust RL, bandits, autonomous driving, car racing.
- Sep 2017

## Industrial Collaborations

- Mar 2021 **RSE**, *Machine Learning for Photovoltaic Systems*.
- Dec 2020 *Description*: We study machine learning methods for fault detection and diagnosis in photovoltaic systems.
- Mar 2021 **Ferrari**, *Reinforcement Learning for Car Racing*.
- Sep 2019 *Description*: We study RL and inverse RL techniques for several car racing applications.
- Mar 2021 **Magneti Marelli**, *Reinforcement Learning for Autonomous Driving*.
- Dec 2017 *Description*: We investigate the application of RL and inverse RL techniques to high-level decision-making in autonomous driving.

## Editorial Activities

- From 2021 **Senior Program Chair**, *AAAI 2022*.
- From 2017 **Program Committee**, *NeurIPS 2019, 2020, 2021, ICML 2020, 2021, AAAI 2020, 2021, ICLR 2020, 2021, AISTATS 2021*.
- From 2017 **Program Committee Subreviewer**, *IROS 2017, AAAI 2018, IJCAI 2018, AAAI 2019*.

## Talks and Seminars

### Talks at International Conferences

- Jun 2019 **Transfer of Samples in Policy Search via Multiple Importance Sampling**, *International Conference on Machine Learning*, Long Beach, California, 2019.
- Dec 2018 **Policy-Conditioned Uncertainty Sets for Robust Markov Decision Processes**, *Neural Information Processing Systems*, Montreal, Canada, 2018.
- Jul 2018 **Importance Weighted Transfer of Samples in Reinforcement Learning**, *International Conference on Machine Learning*, Stockholm, Sweden, 2018.

## Talks at International Workshops

- Oct 2018 **Transferring Value Functions via Variational Methods**, *European Workshop on Reinforcement Learning*, Lille, France, 2018.
- Jul 2018 **Policy-Conditioned Uncertainty Sets for Robust Markov Decision Processes**, *Workshop on Planning and Learning @ ICML 2018*, Stockholm, Sweden, 2018..

## Seminars

- Sep 2019 **Structured Multi-Armed Bandits**, *DEIB*, Politecnico di Milano, Milan, Italy.
- Feb 2018 **Meta Reinforcement Learning**, *DEIB*, Politecnico di Milano, Milan, Italy.

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## Publications

### Conference Papers

- [C14] Clemence Reda, Andrea Tirinzoni, and Remy Degenne. "Dealing with Misspecification in Fixed-Confidence Linear Top-m Identification". In *Advances in Neural Information Processing Systems 34 (NeurIPS)*, Online, 2021.
- [C13] Matteo Papini\*, Andrea Tirinzoni\*, Aldo Pacchiano, Marcello Restelli, Alessandro Lazaric, and Matteo Pirotta. "Reinforcement Learning in Linear MDPs: Constant Regret and Representation Selection". In *Advances in Neural Information Processing Systems 34 (NeurIPS)*, Online, 2021.
- [C12] Matteo Papini, Andrea Tirinzoni, Marcello Restelli, Alessandro Lazaric, and Matteo Pirotta. "Leveraging Good Representations in Linear Contextual Bandits". In *International Conference on Machine Learning (ICML)*, 2021.
- [C11] Riccardo Poiani, Andrea Tirinzoni, and Marcello Restelli. "Meta-Reinforcement Learning by Tracking Task Non-stationarity". In *International Joint Conference on Artificial Intelligence (IJCAI)*, 2021.
- [C10] Andrea Tirinzoni, Matteo Pirotta, Marcello Restelli, and Alessandro Lazaric. "An Asymptotically Optimal Primal-Dual Incremental Algorithm for Linear Contextual Bandits". In *Advances in Neural Information Processing Systems 33 (NeurIPS)*, Vancouver, Canada, 2020.
- [C9] Andrea Tirinzoni, Riccardo Poiani, and Marcello Restelli. "Sequential Transfer in Reinforcement Learning with a Generative Model". In *International Conference on Machine Learning (ICML)*, Vienna, Austria, 2020.
- [C8] Andrea Tirinzoni, Alessandro Lazaric, and Marcello Restelli. "A Novel Confidence-Based Algorithm for Structured Bandits". In *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Palermo, Italy, 2020.
- [C7] Giorgia Ramponi, Amarildo Likmeta, Alberto Maria Metelli, Andrea Tirinzoni, and Marcello Restelli. "Truly Batch Model-Free Inverse Reinforcement Learning about Multiple Intentions". In *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Palermo, Italy, 2020.
- [C6] Pierluca D'Oro, Alberto Maria Metelli, Andrea Tirinzoni, Matteo Papini, and Marcello Restelli. "Gradient-Aware Model-Based Policy Search". In *AAAI*, New York, 2020.
- [C5] Andrea Tirinzoni, Mattia Salvini, and Marcello Restelli. "Transfer of Samples in Policy Search via Multiple Importance Sampling". In *Proceedings of the 36th International Conference on Machine Learning (ICML)*, Long Beach, California, 2019. (acceptance rate: 773/3424 (22.57%))
- [C4] Mario Beraha, Alberto Maria Metelli, Matteo Papini, Andrea Tirinzoni, and Marcello Restelli. "Feature Selection via Mutual Information: New Theoretical Insights". In *International Joint Conference on Neural Networks (IJCNN)*, Budapest, Hungary, 2019.
- [C3] Andrea Tirinzoni, Xiangli Chen, Marek Petrik, and Brian Ziebart. "Policy-Conditioned Uncertainty Sets for Robust Markov Decision Processes". In *Advances in Neural Information Processing Systems 31 (NeurIPS)*, Montreal, Canada, 2018. Spotlight. (acceptance rate: 168/4856 (3.46%))
- [C2] Andrea Tirinzoni, Rafael Rodriguez, and Marcello Restelli. "Transfer of Value Functions via Variational Methods". In *Advances in Neural Information Processing Systems 31 (NeurIPS)*, Montreal, Canada, 2018. (acceptance rate: 1011/4856 (20.82%))
- [C1] Andrea Tirinzoni, Andrea Sessa, Matteo Pirotta, and Marcello Restelli. "Importance Weighted Transfer of

Samples in Reinforcement Learning". In *Proceedings of the 35th International Conference on Machine Learning (ICML)*, Stockholm, Sweden, 2018. (acceptance rate: 618/2473 (24.99%))

### Journal Papers

[J2] 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*, 2021.

[J1] 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*, 2020.

### Workshop Papers

[W4] Andrea Tirinzoni, Matteo Pirota, and Alessandro Lazaric. "A Fully Problem-Dependent Regret Lower Bound for Finite-Horizon MDPs". *Workshop on Reinforcement Learning Theory @ ICML 2021*.

[W3] Pierluca D'Oro, Alberto Maria Metelli, Andrea Tirinzoni, Matteo Papini, and Marcello Restelli. "Gradient-Aware Model-Based Policy Search". *Meta-Learning Workshop @ NeurIPS 2019*.

[W2] Andrea Tirinzoni, Rafael Rodriguez, and Marcello Restelli. "Transferring Value Functions via Variational Methods". In *European Workshop on Reinforcement Learning 14*, Lille, France, 2018. Oral.

[W1] Andrea Tirinzoni, Xiangli Chen, Marek Petrik, and Brian Ziebart. "Policy-Conditioned Uncertainty Sets for Robust Markov Decision Processes". In *Workshop on Planning and Learning @ ICML 2018*, Stockholm, Sweden, 2018. Oral.

### Languages

*Italian*: Mother tongue

*English*: Fluent (TOEFL 100/120)

### Computer Skills

Operating Systems GNU/Linux, Microsoft Windows, Mac OS

Programming Languages Python, Java, C, C++, C#, Scala, MATLAB, R, Lua, Javascript, PHP, Lisp

Frameworks Apache Spark, Tensorflow, Keras, Torch

IDEs Eclipse, PyCharm, Visual Studio, MATLAB, Dev-C++

Typesetting LaTeX, HTML, Microsoft Word