

# Simone Parisi

## Curriculum Vitae

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### Research Interests

Reinforcement Learning, Markov Theory, Exploration, Intrinsic Motivation, Partial Observability, Feature Learning, Transfer Learning, Multi-Objective Optimization, Deep Learning, Foundation Models.

### Work Experience

- 2022 - Today **Postdoctoral Fellow**, *University of Alberta*, Edmonton, Alberta, Canada  
with Michael Bowling, Matthew Taylor, and Dieter Buehler
- 2020 - 2022 **Postdoctoral Researcher**, *Meta AI Research*, Pittsburgh, Pennsylvania, United States  
with Abhinav Gupta

### Education

- 2014 - 2019 **PhD in Computer Science**, *Technische Universität Darmstadt*, Germany  
Thesis: *Reinforcement Learning with Sparse and Multiple Rewards*  
Advisor: Jan Peters  
Honors: Magna Cum Laude
- 2017 **Research Intern**, *RIKEN Center for Advanced Intelligence Project*, Tokyo, Japan  
Advisors: Masashi Sugiyama, Emtiyaz Khan
- 2015 **Machine Learning Summer School**, *Max Planck Institute*, Tübingen, Germany
- 2012 **Exchange Student**, *University of Queensland*, Brisbane, Australia
- 2011 - 2014 **MSc in Computer Science and Engineering**, *Politecnico di Milano*, Italy  
Thesis: *Study and Analysis of Policy Gradient Approaches for Multi-Objective Decision Problems*  
Advisors: Marcello Restelli, Matteo Pirotta
- 2008 - 2011 **BSc in Computer Science and Engineering**, *Politecnico di Milano*, Italy  
Advisor: Carlo Ghezzi

### Publications

Key papers are highlighted with hyperlinks.

#### Books

- [1] Boris Belousov, Hany Abdulsamad, Pascal Klink, **Simone Parisi**, and Jan Peters, *Reinforcement Learning Algorithms: Analysis and Applications*, Springer, 2020

#### Journal Articles

- [2] **Simone Parisi**, Davide Tateo, Maximilian Hensel, Carlo D'Eramo, Jan Peters, and Joni Pajarinen, "Long-Term Visitation Value for Deep Exploration in Sparse Reward Reinforcement Learning", *Algorithms*, 15(3), 2022
- [3] **Simone Parisi**, Voot Tangkaratt, Jan Peters, and Mohammad Emtiyaz Khan, "TD-Regularized Actor-Critic Methods", *Machine Learning (MLJ)*, 2019
- [4] **Simone Parisi**, Matteo Pirotta, and Jan Peters, "Manifold-based Multi-objective Policy Search with Sample Reuse", *Neurocomputing*, 263:3–14, 2017

- [5] **Simone Parisi**, Matteo Pirotta, and Marcello Restelli, "Multi-objective Reinforcement Learning through Continuous Pareto Manifold Approximation", *Journal of Artificial Intelligence Research (JAIR)*, 57:187–227, 2016
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- Conference and Workshop Papers
- [6] Alireza Kazemipour, **Simone Parisi**, Matthew E. Taylor, and Michael Bowling, "Model-Based Exploration in Monitored Markov Decision Processes", *International Conference on Machine Learning (ICML)*, 2025
  - [7] **Simone Parisi**, Alireza Kazemipour, and Michael Bowling, "**Beyond Optimism: Exploration With Partially Observable Rewards**", *Advances in Neural Information Processing Systems (NeurIPS)*, 2024
  - [8] **Simone Parisi**, Montaser Mohammedalamen, Alireza Kazemipour, Matthew E. Taylor, and Michael Bowling, "**Monitored Markov Decision Processes**", *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2024
  - [9] **Simone Parisi**, Aravind Rajeswaran, Senthil Purushwalkam, and Abhinav Gupta, "**The (Un)Surprising Effectiveness of Pre-Trained Vision Models for Control**", *International Conference on Machine Learning (ICML)*, 2022 [Long oral, acc. rate 2%]
  - [10] **Simone Parisi**, Victoria Dean, Deepak Pathak, and Abhinav Gupta, "**Interesting Object, Curious Agent: Learning Task-Agnostic Exploration**", *Advances in Neural Information Processing Systems (NeurIPS)*, 2021 [Oral, acc. rate <1%]
  - [11] **Simone Parisi**, Voot Tangkaratt, Jan Peters, and Mohammad Emtiyaz Khan, "TD-Regularized Actor-Critic Methods", *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD)*, 2019
  - [12] **Simone Parisi**, Voot Tangkaratt, Jan Peters, and Mohammad Emtiyaz Khan, "TD-Regularized Actor-Critic Methods", *European Workshop on Reinforcement Learning (EWRL)*, 2018
  - [13] **Simone Parisi**, Simon Ramstedt, and Jan Peters, "Goal-Drive Dimensionality Reduction for Reinforcement Learning", *International Conference on Intelligent Robots and Systems (IROS)*, 2017
  - [14] **Simone Parisi**, Voot Tangkaratt, and Jan Peters, "Regularized Contextual Policy Search via Mutual Information", *Multi-disciplinary Conference on Reinforcement Learning and Decision Making (RLDM)*, 2017
  - [15] Voot Tangkaratt, Herke van Hoof, **Simone Parisi**, Gerhard Neumann, Jan Peters, and Masashi Sugiyama, "Policy Search with High-Dimensional Context Variables", *AAAI Conference on Artificial Intelligence (AAAI)*, 2017
  - [16] **Simone Parisi**, Alexander Blank, Tobias Viernickel, and Jan Peters, "Local-Utopia Policy Ceselection for Multi-Objective Reinforcement Learning", *International Symposium on Adaptive Dynamic Programming and Reinforcement Learning (ADPRL)*, 2016
  - [17] **Simone Parisi**, Hany Abdulsamad, Alexandros Paraschos, Christian Daniel, and Jan Peters, "Reinforcement Learning vs Human Programming in Tetherball Robot Games", *International Conference on Intelligent Robots and Systems (IROS)*, 2015
  - [18] Matteo Pirotta, **Simone Parisi**, and Marcello Restelli, "Multi-Objective Reinforcement Learning with Continuous Pareto Frontier Approximation", *AAAI Conference on Artificial Intelligence (AAAI)*, 2015
  - [19] **Simone Parisi**, Matteo Pirotta, Nicola Smacchia, Luca Bascetta, and Marcello Restelli, "Policy Gradient Approaches for Multi-Objective Sequential Decision Making", *International Joint Conference on Neural Networks (IJCNN)*, 2014

- [20] **Simone Parisi**, Matteo Pirota, Nicola Smacchia, Luca Bascetta, and Marcello Restelli, "Policy Gradient Approaches for Multi-Objective Sequential Decision Making: A Comparison", *International Symposium on Adaptive Dynamic Programming and Reinforcement Learning (ADPRL)*, 2014

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## Teaching Experience

### Lecturer

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- 2025 CMPUT 631 - Robot Learning (Graduate Course), *University of Alberta*  
2024 CMPUT 655 - Reinforcement Learning (Graduate Course), *University of Alberta*

### Teaching Assistant

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- 2018 - 2019 Reinforcement Learning, *Technische Universität Darmstadt*  
2017 Statistical Machine Learning, *Technische Universität Darmstadt*  
2016 - 2017 Robot Learning, *Technische Universität Darmstadt*  
2016 Statistical Machine Learning, *Technische Universität Darmstadt*

### MSc Thesis Supervision

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- 2024 Alireza Kazemipour (UoA). *Using Models to Better Explore with Partially Observable Rewards*  
2020 Eike Mentzendorff (TUDa). *Bridging the Gap Between Multi-Objective and Multi-Task Deep Reinforcement Learning*  
2019 Kai Cui (TUDa). *A Study on TD-Regularized Actor-Critic Methods*  
2019 Shuo Zhang (TUDa). *Integration of Self-Imitation and Model-based Learning to Actor-Critic Algorithms*  
2019 Stefan Hübecker (TUDa). *Curiosity-Driven Reinforcement Learning for Autonomous Driving*

### BSc Thesis Supervision

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- 2019 Leon Keller (TUDa). *Application of Reinforcement Learning Algorithms to Robotics Simulators*  
2016 Simon Ramstedt (TUDa). *Deep Reinforcement Learning with Continuous Actions*

### Project Supervision

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- 2024 Mohammadreza Daviran, Hamid Reza Dehbashi Ghorbanali (UoA). *Effects of Linear Networks Depth in Rapid Reinforcement Learning*  
2024 Seth Akins, Matthias Horgen, Nicolas Ong (UoA). *The Effects of Action Delay and Action Repeats in Reinforcement Learning*  
2024 Kiran Deol, Danila Seliayeu, Avani Tiwari (UoA). *Evaluating the Evolution of Geometric Properties in DQN Representations*  
2024 Azeez Adeniyi, Isaiah Heidt (UoA). *What Hinders Reinforcement Learning More: Action Noise, Observation Noise, or Reward Noise?*  
2024 Euijin Baek, Andrew Freeman, Minh Pham (UoA). *How Much Does Corruption Affect Preference-Based Reinforcement Learning?*  
2021 Jacob Adkins (CMU). *Transfer Exploration in RL: A Study on Recent Count-Based Methods*  
2018 Shuo Zhang, Lu Wan (TUDa). *Enhancing Exploration Through Curiosity for Robotics*  
2016 - 2017 Simon Ramstedt (TUDa). *Bayesian Deep Reinforcement Learning: Tools and Methods*  
2015 - 2016 Jan-Christoph Klie, Xuelei Li (TUDa). *Feature Selection for Tetherball Robot Games*  
2014 - 2015 Alexander Blank, Tobias Viernickel (TUDa). *Multi-Objective Reinforcement Learning for Tetherball Robot Games*

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## Funding

- 2025 - 2026 **Embodied Foundation Models**, 83,000 CAD  
Source Alberta Machine Intelligence Institute (AMII), Resource Allocation Project  
Co-PI Dieter Büchler, Michael Bowling
- 2024 - 2025 **Search, Learning, and Acting Under Uncertainty**, 128,501 CAD  
Source Digital Research Alliance of Canada, Resources for Research Groups Application  
Co-PI Michael Bowling
- 2024 - 2025 **Assisted Reinforcement Learning for Real-World Tasks**, 85,898 CAD  
Source Digital Research Alliance of Canada, Resources for Research Groups Application  
Co-PI Matthew Taylor
- 2023 - 2025 **Monitored Reinforcement Learning**, 169,000 CAD  
Source Alberta Machine Intelligence Institute (AMII), Resource Allocation Project  
Co-PI Michael Bowling, Matthew Taylor

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## Invited Talks

- 25 Apr 2025 **Tampere University**, Tampere, Finland  
Host: Joni Kämäräinen
- 23 Apr 2025 **Aalto University**, Espoo, Finland  
Host: Ville Kyrki
- 10 Oct 2024 **Fundamental AI Research (FAIR) at Meta**, Paris, France  
Host: Alessandro Lazaric
- 19 Sep 2024 **Amazon Research**, Seattle, United States  
Host: Lihong Li
- 26 Sep 2022 **Alberta Machine Intelligence Institute (AMII)**, Edmonton, Canada  
Host: Michael Bowling
- 6 Sep 2022 **Montréal Institute for Learning Algorithms (MILA)**, Montréal, Canada  
Host: Glen Berseth
- 19 Aug 2022 **UC Berkley, Robotic Artificial Intelligence and Learning Lab**, Berkeley, United States  
Host: Sergey Levine
- 14 Apr 2022 **NVIDIA, Robotics Research**, Seattle, United States  
Host: Dieter Fox
- 30 Aug 2019 **University of Texas, Learning Agents Research Group (LARG)**, Austin, United States  
Host: Peter Stone
- 28 Aug 2019 **Brown University, Dept. of Computer Science**, Providence, United States  
Host: Michael Littman
- 26 Aug 2019 **Meta AI Research**, Pittsburgh, United States  
Host: Abhinav Gupta
- 24 May 2019 **Max Planck Institute (MPI), Dept. of Empirical Inference**, Tübingen, Germany  
Host: Bernhard Schölkopf
- 6 May 2019 **Delft University of Technology, Dept. of Cognitive Robotics (CoR)**, Delft, Netherlands  
Host: Jens Kober
- 3 May 2019 **University of Amsterdam, Machine Learning Lab (AMLab)**, Amsterdam, Netherlands  
Hosts: Herke van Hoof, Max Welling
- 15 Dec 2017 **Advanced Telecommunications Research Institute (ATR)**, Kyoto, Japan  
Host: Jun Morimoto
- 2 Oct 2017 **RIKEN Center for Advanced Intelligence Project (AIP)**, Tokyo, Japan  
Hosts: Emtiyaz Khan, Masashi Sugiyama

## Reviewing Experience

- Action Editor Transactions on Machine Learning Research (TMLR: 2024)
- Journals IEEE Robotics and Automation Letters (RAL: 2021), Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS: 2021), Neurocomputing (2016, 2017), Journal of Machine Learning Research (JMLR: 2016), International Journal of Advanced Robotic Systems (IJARS: 2016)
- Conferences Advances in Neural Information Processing Systems (NeurIPS: 2018, 2019, 2021, 2023), International Conference on Intelligent Robots and Systems (IROS: 2015, 2017, 2020, 2021, 2023), International Conference on Automated Planning and Scheduling (ICAPS: 2020), International Conference on Learning Representations (ICLR: 2019, 2021, 2022), Reinforcement Learning Conference (RLC: 2025), Conference on Robot Learning (CoRL: 2018, 2021), International Conference on Flexible Automation and Intelligent Manufacturing (FAIM: 2018), AAAI Conference on Artificial Intelligence (AAAI: 2017, 2018), International Conference on Robotics and Automation (ICRA: 2017, 2020, 2021), Robotics: Science and Systems (RSS: 2016), International Joint Conference on Artificial Intelligence (IJCAI: 2016), International Conference on Automation Science and Engineering (CASE: 2015), European Workshop on Reinforcement Learning (EWRL: 2015, 2018, 2024)

## Computer Skills

Python,  $\LaTeX$ , Git

## Languages

Italian (Mother tongue), English (Fluent)

## References

**Michael Bowling**, University of Alberta

**Matthew Taylor**, University of Alberta

**Abhinav Gupta**, Carnegie Mellon University

**Jan Peters**, Technische Universität Darmstadt

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