Simone Parisi

Curriculum Vitae

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sparisi.github.io
sparisi

Research Interests

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

Work Experience

2022 - Today **Postdoctoral Fellow**, *University of Alberta*, Edmonton, Alberta, Canada
with Michael Bowling and Matthew Taylor

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

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

Conference and Workshop Papers

[6] **Simone Parisi**, Alireza Kazemipour, and Michael Bowling, "Beyond Optimism: Exploration With Partially Observable Rewards", *Advances in Neural Information Processing Systems (NeurIPS)*, 2024

[7] **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

[8] **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%]**

[9] **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%]**

[10] **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

[11] **Simone Parisi**, Voot Tangkaratt, Jan Peters, and Mohammad Emtiyaz Khan, "TD-Regularized Actor-Critic Methods", *European Workshop on Reinforcement Learning (EWRL)*, 2018

[12] **Simone Parisi**, Simon Ramstedt, and Jan Peters, "Goal-Drive Dimensionality Reduction for Reinforcement Learning", *International Conference on Intelligent Robots and Systems (IROS)*, 2017

[13] **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

[14] 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

[15] **Simone Parisi**, Alexander Blank, Tobias Viernickel, and Jan Peters, "Local-Utopia Policy Celection for Multi-Objective Reinforcement Learning", *International Symposium on Adaptive Dynamic Programming and Reinforcement Learning (ADPRL)*, 2016

[16] **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

[17] Matteo Pirotta, **Simone Parisi**, and Marcello Restelli, "Multi-Objective Reinforcement Learning with Continuous Pareto Frontier Approximation", *AAAI Conference on Artificial Intelligence (AAAI)*, 2015

[18] **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

[19] **Simone Parisi**, Matteo Pirotta, 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

Teaching Experience

Lecturer

2024 CMPUT 655 - Reinforcement Learning 1 (Graduate Course), *University of Alberta*

Teaching Assistant

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

2024 Alireza Kazemipour (UoA). *A Systematic Approach to Solve Monitored Markov Decision Processes*
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

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

Project Supervision

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*

Funding

2024 - 2025 **Resources for Research Groups Application**, 128,501 CAD
Title Search, Learning, and Acting Under Uncertainty
Source Digital Research Alliance of Canada
Co-PI Michael Bowling

2024 - 2025 **Resources for Research Groups Application**, 85,898 CAD
Title Assisted Reinforcement Learning for Real-World Tasks
Source Digital Research Alliance of Canada
Co-PI Matthew Taylor

2024 - 2025 **Resource Allocation Project**, 95,000 CAD
Title Monitored Reinforcement Learning: A Framework for Modelling Limited Reward Availability in Realistic Settings

Source Alberta Machine Intelligence Institute (AMII)
Co-PI Co-PI: Michael Bowling, Matthew Taylor

2023 - 2024 **Resource Allocation Project**, 74,000 CAD
Title Monitored Reinforcement Learning: A Framework for Modelling Limited Reward Availability in Realistic Settings
Source Alberta Machine Intelligence Institute (AMII)
Co-PI Michael Bowling, Matthew Taylor

Invited Talks

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), 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 ✉ mbowling@ualberta.ca
Matthew Taylor, University of Alberta ✉ mtaylor3@ualberta.ca
Abhinav Gupta, Carnegie Mellon University ✉ gabhinav@andrew.cmu.edu
Jan Peters, Technische Universität Darmstadt ✉ mail@jan-peters.net