

# Simone Parisi

## Curriculum Vitae

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## Research Interests

**Machine Learning:** Reinforcement Learning, Exploration, Intrinsic Motivation, Policy Search, Feature Learning, Transfer Learning, Multi-objective Optimization, Deep Learning.

**Autonomous Robots:** Motor Skill Learning, Trajectory Optimization, Imitation Learning, Movement Primitives.

## Work Experience

- 2022 - Today **Visiting Researcher**, *Carnegie Mellon University*, Pittsburgh, Pennsylvania, United States  
with Abhinav Gupta
- 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 Pirodda
- 2008 - 2011 **BSc in Computer Science and Engineering**, *Politecnico di Milano*, Italy  
Advisor: Carlo Ghezzi

## Publications

### Journal Articles

- [1] **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
- [2] **Simone Parisi**, Voot Tangkaratt, Jan Peters, and Mohammad Emtiyaz Khan, "TD-Regularized Actor-Critic Methods", *Machine Learning (MLJ)*, 2019
- [3] **Simone Parisi**, Matteo Pirodda, and Jan Peters, "Manifold-based Multi-objective Policy Search with Sample Reuse", *Neurocomputing*, 263:3–14, 2017
- [4] **Simone Parisi**, Matteo Pirodda, 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

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- [5] **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%**]
- [6] **Simone Parisi**, Victoria Dean, Deepak Pathak, and Abhinav Gupta, “Interesting Object, Curious Agent: Learning Task-Agnostic Exploration”, *International Conference on Neural Information Processing Systems (NeurIPS)*, 2021 [**Oral, acc. rate <1%**]
- [7] **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
- [8] **Simone Parisi**, Voot Tangkaratt, Jan Peters, and Mohammad Emtiyaz Khan, “TD-Regularized Actor-Critic Methods”, *European Workshop on Reinforcement Learning (EWRL)*, 2018
- [9] **Simone Parisi**, Simon Ramstedt, and Jan Peters, “Goal-Drive Dimensionality Reduction for Reinforcement Learning”, *International Conference on Intelligent Robots and Systems (IROS)*, 2017
- [10] **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
- [11] 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
- [12] **Simone Parisi**, Alexander Blank, Tobias Viernickel, and Jan Peters, “Local-utopia policy selection for multi-objective reinforcement learning”, *International Symposium on Adaptive Dynamic Programming and Reinforcement Learning (ADPRL)*, 2016
- [13] **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
- [14] Matteo Pirodda, **Simone Parisi**, and Marcello Restelli, “Multi-Objective Reinforcement Learning with Continuous Pareto Frontier Approximation”, *AAAI Conference on Artificial Intelligence (AAAI)*, 2015
- [15] **Simone Parisi**, Matteo Pirodda, Nicola Smacchia, Luca Bascetta, and Marcello Restelli, “Policy gradient approaches for multi-objective sequential decision making”, *International Joint Conference on Neural Networks (IJCNN)*, 2014
- [16] **Simone Parisi**, Matteo Pirodda, 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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## Invited Talks

- 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

### Journals

IEEE Robotics and Automation Letters (RA-L)	2021
Neurocomputing	2016, 2017
Journal of Machine Learning Research (JMLR)	2016
International Journal of Advanced Robotic Systems (IJARS)	2016

### Conferences

Conference on Neural Information Processing Systems (NeurIPS)	2021
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)	2015, 2017, 2020, 2021
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
AAAI Conference on Artificial Intelligence (AAAI)	2017, 2018
IEEE International Conference on Robotics and Automation (ICRA)	2017, 2021
Robotics: Science and Systems (R:SS)	2016
International Joint Conference on Artificial Intelligence (IJCAI)	2016
IEEE International Conference on Automation Science and Engineering (CASE)	2015

### Workshops

Multi-Objective Decision Making Workshop (MODeM)	2021
Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS)	
Workshop on Robot Learning	2019
Conference on Neural Information Processing Systems (NeurIPS)	
Workshop on Reinforcement Learning under Partial Observability	2018
Conference on Neural Information Processing Systems (NeurIPS)	
Workshop on Prediction and Generative Modeling in Reinforcement Learning	2018
International Conference on Flexible Automation and Intelligent Manufacturing (FAIM)	
European Workshop on Reinforcement Learning (EWRL)	2015, 2018

### Workshop Proposals

International Conference on Robotics and Automation (ICRA)	2020
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## Teaching Experience

### 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

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- 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 Stefan Hübner (TUDa). *Curiosity-driven Reinforcement Learning for Autonomous Driving*  
2019 Shuo Zhang (TUDa). *Integration of Self-imitation and Model-based Learning to Actor-critic Algorithms*

#### 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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- 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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## Computer Skills

Python, MATLAB,  $\text{\LaTeX}$ , Git

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## Languages

Italian (Mother tongue), English (Fluent)

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## Hobbies

Strength Training, Movies, Cooking, Photography

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## References

**Abhinav Gupta**, Carnegie Mellon University  
**Jan Peters**, Technische Universität Darmstadt  
**Deepak Pathak**, Carnegie Mellon University

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