



Davide Tateo

Curriculum Vitae

Personal Data

Current position **Postdoctoral researcher and Group Leader**, *Technische Universität Darmstadt*, Intelligent Autonomous Systems Group, Darmstadt.

Main Address Hochschulstraße 10, 64289 Darmstadt, Germany

Birthdate 09-04-1990

Birthplace Abbiategrasso (Italy)

Citizenship Italian

Research Interests

Embodied AI: Robot Learning, Learning to Plan, Robot Skill Learning.

Robotics: Robotic manipulators, Legged Robots, High-speed Movement Primitives, Planning and Control.

Reinforcement Learning: Safe Reinforcement Learning, Interpretable Reinforcement Learning, Structured Exploration, Deep Reinforcement Learning, Inverse Reinforcement Learning.

Education

2014–2019 **Ph.D. in *Information Technology***, *Politecnico di Milano*, Milano, Italy.
advisor: Andrea Bonarini and Marcello Restelli
thesis title: Building structured hierarchical agents
topics: Machine Learning, Reinforcement Learning, Robotics, Deep Learning

2012–2014 **M.Sc. Degree in *Computer Engineering***, *Politecnico di Milano*, Milano, Italy, *110/110 cum laude*.
advisor: Andrea Bonarini
thesis title: Cognitive SLAM: knowledge-based simultaneous localization and mapping
topics: Artificial Intelligence, Robotics
average grade: 29.85/30

2009–2012 **B.Sc. Degree in *Computer Engineering***, *Politecnico di Milano*, Milano, Italy, *108/110*.
topics: Fundamentals of Computer Science, Software Engineering, Robotics, Embedded Systems

2004–2009 **Maturità Scientifica**, *Istituto Istruzione Superiore V. Bachelet*, Abbiategrasso, Italy, *100/100*.

Teaching

Lecturer **Reinforcement Learning: From Foundations to Deep Approaches**, Technische Universität Darmstadt, Summer semester 2022.
Course organization, definition of the syllabus, development of slides and content, teaching

Teaching Assistant **Foundations of Computer Science (“Informatica”)**, *prof. Andrea Bonarini*, Politecnico di Milano, 2016-2017.
Teaching of C programming language, 30 hours

Laboratory tutor **Laboratory – Foundations of Computer Science (“Informatica”)**, *prof. Andrea Bonarini*, Politecnico di Milano, 2016-2017.
Didactic Laboratory on C programming Language 10 hours

Teaching Assistant **Foundations of Computer Science ("Informatica")**, *prof. Andrea Bonarini*, Politecnico di Milano, 2017-2018.
Teaching of C programming language, 30 hours

Professional Experience

- April 2019 – **Postdoctoral Researcher and Group Leader**, *Intelligent Autonomous Systems (IAS)*, Technische Universität Darmstadt, Darmstadt, Germany.
Reinforcement Learning, Robotics
- July 2007 – **Vocational Training in Industrial Machine Operation**, *Ficem di Giuliano Tateo & C. S.A.S.*, Vigano di Gaggiano, Italy.
May 2012 CNC Machine operation, CAD designer

Research Grants

- 2021 **DFG Research Grant PE 2315/14-1**, *Improving the understanding of neuromuscular gait control using deep reinforcement learning (DeepWalking)*: €542.090, TU Darmstadt.
I contributed to the development of the proposal and I led the writing on the machine learning part of the proposal
- 2022 **NCN-DFG (Weave) Research Grant PE 2315/17-1**, *Learning Versatile Legged Locomotion with Active Perception (INTENTION)*: €654.700, Poznan University of Technology, TU Darmstadt.
I developed the proposal and led the writing on the TU Darmstadt side

Awards & Scholarships

- 2022 **Top Reviewer**, *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Online.
- 2021 **Best Paper Award Finalist**, *Conference on Robot Learning (CoRL)*, London, United Kingdom.
"Robot reinforcement learning on the constraint manifold"
- 2021 **Best Entertainment and Amusement Paper Award Finalist**, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Prague, Czech Republic, Online.
"Efficient and Reactive Planning for High Speed Robot Air Hockey"
- 2014 **Ph.D. scholarship**, *Italian Ministry of Education*.

Talks

- 2022 **Invited talk**, *Università degli Studi Di Milano*, Milano, Italy.
"Robot Learning: acting under safety constraints"
- 2018 **Spotlight talk and poster**, *Thirty-Second AAAI Conference on Artificial Intelligence (AAAI-18)*, New Orleans, Louisiana, USA.
"Multiagent Connected Path Planning: PSPACE-Completeness and How to Deal with It"
- 2017 **Talk**, *IEEE Symposium Series On Computational Intelligence (SSCI-ADPRL)*, Honolulu, Hawaii, USA.
"Gradient-based minimization for multi-expert inverse reinforcement learning"

Reviewing activities

As Reviewer

- Journals IEEE Robotics and Automation Letters, IEEE Transactions on Robotics, Autonomous Robots
- Conferences Conference on Robot Learning (CoRL), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE International Conference on Robotics and Automation (ICRA), International Conference on Artificial Intelligence and Statistics (AISTATS), International Joint Conference on Artificial Intelligence (IJCAI), International Conference on Learning Representations (ICLR)

As Area Chair

- 2022 Conference on Robot Learning (CoRL)

Thesis Supervision

- ongoing **M.Sc. supervisor**, *Johannes Heeg*.
Smooth Exploration for Robotics on the Geometric Manifold
- B.Sc. co-supervisor**, *Rolf Gattung*, in collaboration with Prof. Georgia Chalvatzaki and Dr. Marija Popović.
Active volumetric scene understanding for robotics
- B.Sc. supervisor**, *Tim Althaus*.
Inverse Reinforcement Learning from Observation for Locomotion on the Unitree A1 Robot
- M.Sc. supervisor**, *Bane Janjus*.
Genetic Programming for Interpretable Reinforcement Learning
- 2022 **M.Sc. supervisor**, *Kuo Zhang*.
Learning human models for safe human-robot handovers
- B.Sc. supervisor**, *Jonas Günster*.
Learning the Low-level Policy for Robot Air Hockey
- M.Sc. supervisor**, *Verena Sieburger*.
Building up the Baseline Agent for Robot Air Hockey
- 2021 **B.Sc. supervisor**, *Felix Helfenstein*.
Benchmarking Deep Reinforcement Learning Algorithms
- 2018 **M.Sc. co-supervisor**, *Carolina Beretta, Cecilia Brizzolari*.
Smooth sample-based path planning for non-holonomic mobile robots in real 2D environments: algorithms and results
- M.Sc. co-supervisor**, *İdil Su Erdenliğ*.
A Control Theory Framework for Hierarchical Reinforcement Learning

Other Supervision

- ongoing **Student Project supervisor**, *Jonas Günster*.
Robot Air Hockey challenge
- Student Project supervisor**, *Kilian Feess*.
System identification and control for Telemax manipulator
- Student Project supervisor**, *Felix Herrmann, Sebastian Zach*.
Learning Deep Probability Fields for Planning and Control
- Student Project supervisor**, *Henri Geiss*.
Combining RL/IL with CPGs for Humanoid Locomotion
- 2022 **Student Project supervisor**, *Patrick Vimr*.
Interpretable Reinforcement Learning
- Student Project supervisor**, *Joshua Johansson, Andreas Seidl Fernandez*.
Learning the Gait for Legged Robot via Safe Reinforcement Learning
- 2021 **Online Internship supervisor**, *Shrey Verma*.
Puck reset system for Air Hockey
- Student Project supervisor**, *Marius Memmel*.
Guided Dimensionality Reduction for Black-Box Optimization
- Student Project supervisor**, *Chen Xue., Verena Sieburger*.
Bayesian Optimization for System Identification in Robot Air Hockey
- 2020 **Student Project supervisor**, *Benedikt Volker*.
Benchmarking Deep Reinforcement Learning
- 2019 **Erasmus Internship supervisor**, *António Manuel Moreira Pereira, Manuel de Castro Palermo*.
Gait Learning: Biped walking using DeepReinforcement Learning Algorithms
- Student Project supervisor**, *Patrick Lutz*.
Robot Air-Hockey

Supervision of Ph.D. students

Under the “Safe and Reliable Robot Learning” research group

ongoing **Puze Liu.**

Robot Air hockey, Safe Reinforcement Learning

Firas Al-Hafez.

Inverse Reinforcement Learning, Locomotion, Policy Gradient for nonstationary policies

Junning Huang.

System identification, Active disturbance rejection control

Collaborations with visiting students

2022 **Piotr Kicki**, *Poznan University of Technology.*

Learning to Plan, Robot Air hockey

Computer skills

languages C/C++, Python, Matlab, Latex

libraries MushroomRL, Pytorch, Tensorflow, openai-gym, Deep Mind Control Suite, numpy, armadillo

Autonomous Robots Robot Operating System (ROS), Gazebo, MuJoCo, Pybullet

Embedded Systems Microcontrollers programming, Real Time Operating Systems

Languages

Italian Mother tongue

Spanish Mother tongue

English B2

(only basic writing skills)

First Certificate in English - B (FCE)

References

Prof. Jan Peters, Ph.D.

Technische Universität Darmstadt, Department of Computer Science,
Intelligent Autonomous Systems group
Hochschulstr. 10, 64289 Darmstadt, Germany
Phone: +49-6151-16-25374, Fax: +49-6151-16-25375
email: jan.peters@tu-darmstadt.de

Prof. Andrea Bonarini, Ph.D.

Politecnico di Milano, Department of Electronics, Computer Science and Bioengineering,
Artificial Intelligence Research laboratory
Via Ponzio 34/5, 20133 Milano, Italy
Phone: +39-02-2399-3525, Fax: +39-02-2399-3411
email: andrea.bonarini@polimi.it

Prof. Marcello Restelli, Ph.D.

Politecnico di Milano, Department of Electronics, Computer Science and Bioengineering,
Artificial Intelligence Research laboratory
Via Ponzio 34/5, 20133 Milano, Italy
Phone: +39-02-2399-4015, Fax: +39-02-2399-3411
email: marcello.restelli@polimi.it

Prof. Haitham Bou-Ammar, Ph.D.

Huawei London, University College London and Sanome
Gridiron Building 1 St Pancras square King's Cross London N1C 4AG, United Kingdom
Phone: +44-7780562871
email: haitham.ammar@huawei.com

Prof. Krzysztof Walas, Ph. D.

Poznan University of Technology
Piotrowo 3a, 60-965 Poznan, Poland
Phone: +48 61 665 3063
email: krzysztof.walas@put.poznan.pl