

Andrea Del Prete

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Birth date: 03/09/1984

Summary

Since 2022 I have been an associate professor in the Industrial Engineering Department of the University of Trento (Italy), where I am teaching robotics and computer programming in C++. From 2019 to 2021 I had been a tenure-track assistant professor (RTD-B) in the same department. In 2018 I had been a research scientist in the Movement Generation and Control group at the Max-Planck Institute for Intelligent Systems (Tuebingen, Germany), under the lead of Ludovic Righetti. From 2014 to 2017 I had been an associated researcher in the Gepetto team (LAAS-CNRS, Toulouse), where I had been working with the humanoid robot HRP-2. Before moving to LAAS I had spent four years (3 of PhD + 1 of post-doc) at the Italian Institute of Technology (IIT, Genova, Italy), where I had been working on the iCub humanoid robot, under the supervision of Lorenzo Natale, Francesco Nori and Giorgio Metta.

Employment History

- Jan 2022 - Present **Associate Professor**, Industrial Engineering Department, University of Trento.
Via Sommarive 9, Trento, Italy
- Jan 2019 - Dec 2021 **Assistant Professor**, Industrial Engineering Department, University of Trento.
Via Sommarive 9, Trento, Italy
- Jan 2018 - Dec 2018 **Research Scientist**, *working on Athena robot under ERC grant "ContAct"*, Advanced Motion Department, Max-Planck-Institute for Intelligent Systems.
Max-Planck-Ring, 4, Tuebingen, Germany
- Jan 2014 - Dec 2017 **Post-Doc**, *working on HRP-2 robot for EU project "Koroibot" and ANR project "Entract"*, Team "Gepetto", LAAS-CNRS.
7, avenue du Colonel Roche, 31400 Toulouse Cedex 4, France
- Jan-Dec 2013 **Post-Doc**, *working on iCub robot for EU project "CoDyCo"*, Department "iCub Facility", Istituto Italiano di Tecnologia (IIT), Genova, Italy.
- Oct-Nov 2011 **Teaching Assistant**, *University of Genova*, Italy.
I gave laboratory lessons for the course of "Natural and Artificial Intelligent Systems"
- Jan-Dec 2009 **Software engineer**, *2nd Faculty of the University of Bologna and software house Net-Agree*, Cesena, Italy.
Technology transfer project (grant Spinner) for re-engineering a data-intensive web application
- Sep 2006 - Dec 2008 **Private lesson teacher**, *Cesena*, Italy.
During my master I gave private lessons of math and computer science to undergraduate students

Education

- Jan 2010 - Dec 2012 **PhD student**, *“Control of Contact Forces using Whole-Body Force and Tactile Sensors: Theory and Implementation on the iCub Humanoid Robot”*, Department of “Robotics, Brain and Cognitive Sciences”, Istituto Italiano di Tecnologia (IIT), Genova, Italy.
Defense date: 23/04/2013.
- Jan 2007 - Mar 2009 **Master Degree**, *Computer Engineering*, 2nd Faculty of the University of Bologna, Italy, *110/110 with honors*.
- Sep 2003 - Jan 2007 **Bachelor Degree**, *Computer Engineering*, 2nd Faculty of the University of Bologna, Italy, *110/110 with honors*.
- Sep 1998 - Jun 2003 **High school diploma**, *Industrial Technical Institute*, Cesena, Italy, 100/100.

Scientific Activities

Projects

- EU H2020 Memmo, 2018-2022, I participated to the writing of the proposal and I was PI of UniTN.
- EU FP7 Koroibot, 2014.
- EU FP7 CoDyCo, 2013.
- EU FP7 RoboSkin, 2010-2012, I had responsibility for the preparation of the final project demonstration.

Scientific Events

- 2021 **Session chair**, *“Optimization in Robotic Design II”*, IEEE ICRA.
- 2017 **Workshop co-organizer**, *D. Kanoulas, I. Havoutis, M. Fallon, A. Del Prete, E. Yoshida*, “Perception and Planning for Legged Robot Locomotion in Challenging Domains”, full-day workshop at IEEE ICRA 2017.
Singapore
- 2016 **Workshop co-organizer**, *A. Del Prete, A. Herzog, R. Tedrake*, “Robust Optimization-Based Planning and Control for Legged Robots”, full-day workshop at IEEE ICRA 2016.
Stockholm, Sweden
- 2016 **PhD School co-organizer**, *O. Stasse, A. Del Prete, M. Bennewitz*, “The German-French Winter-School on Humanoid and Legged Robots”, 5-7 December 2016.
Toulouse, France
- 2013 **Workshop co-organizer**, *A. Del Prete, L. Sentis*, “Torque-Controlled Humanoids”, full-day workshop at Humanoids 2013.
Atlanta, Georgia, USA

PhD Evaluation Panels

- Reviewer and examination committee member for PhD candidate: Marie Charbonneau. “Methods to improve the coping capacities of whole-body controllers for humanoid robots”. Supervisors: Francesco Nori, Daniele Pucci. Università degli Studi di Genova, 2019.

- Examination committee member for PhD candidate: Anis Meguenani. “Safe Control of Robotic Manipulators in Dynamic Contexts”. Supervisors: Philippe Bidaud, Vincent Padois. Pierre & Marie Curie University (Paris), 2017.

Editorial Activities

- Associate Editor for IFAC Conference on Nonlinear Model Predictive Control (NMPC) 2024, Kyoto, Japan.
- Associate Editor for IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2022, Kyoto, Japan.
- Associate Editor for IEEE Robotics and Automation Letters (RA-L), since 2020
- Co-organizer of special issue “Bridging the gap between the lab and the real world: future perspectives for legged robots” on Frontiers in Robotics and AI, by M. Focchi, A. Del Prete, D. Pucci. 2020.
- Associate Editor for IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2017, Vancouver, Canada.
- Associate Editor for IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2016, Daejeon, Korea.
- Reviewer for main robotics journals and conferences, including: IEEE Transaction on Robotics, Autonomous Robots, Robotics and Autonomous Systems, International Journal of Humanoid Robotics, ICRA, IROS, RSS, Humanoids.

PhD Students

- Elisa Alboni, UniTN, 2023-2025
- Gianni Lunardi, UniTN, 2022-2024
- Gabriele Fadini, LAAS-CNRS, co-supervision with T. Flayols and P. Soueres (CNRS), 2020-2023
- Francesco Roscia, IIT, co-supervision with M. Focchi (IIT), 2020-2023
- Gianluigi Grandesso, UniTN, co-supervision with Patrick Wensing (University of Notre Dame), 2019-2023
- Ahmad Gazar, MPI, co-supervision with Ludovic Righetti (NYU), 2018-2023
- Thomas Flayols, LAAS-CNRS, co-supervision with Olivier Stasse (CNRS), 2015-2018
- Nirmal Giftsun, LAAS-CNRS, co-supervision with Florent Lamiraux (CNRS), 2016-2017

Invited Talks

- May 2021 **R4**, *French regional robotics working group*, “Task-Space Inverse Dynamics: a C++ Library for Efficient Whole-Body Control”.
- April 2021 **Co-scienza 2021**, *Scientific dissemination festival*, “Memory of motion: biped and quadruped robots that learn to walk”, Trento.

- Jun 2019 **RSS 2019, Freiburg**, *Workshop “Numerical Optimization for Online Multi-Contact Motion Planning and Control”*, “Balancing on Visco-Elastic Contacts”.
- May 2019 **University of Stuttgart**, *AI colloquium series*, “Motion Control for Legged Robots: Robustness, Viability and Hardware Design”.
- Dec 2018 **German-French Conference on Humanoid and Legged Robots 2018, Munich**, *French-German Conference on Humanoid and Legged Robots*, “Multi-Contact Balancing: Capturability and Elastic Contacts”.
- Aug 2018 **Tech2d, Frankfurt (Germany)**, Sustainable development forum, “The rise of the robots”.
- Jun 2017 **ICRA 2017, Singapore**, *Workshop “Disaster Response Robots: Design Principles and Control for Effective Mobility and Manipulation”*, “Robust Optimization-Based Robotics”.
- Jun 2017 **ICRA 2017, Singapore**, *Workshop “Robust Perception, Planning, and Control for Legged Robot Locomotion in Challenging Domains”*, “Robust Optimization and Motion Memory for Reliable Robotics”.
- Dec 2016 **LIRMM, Montpellier**, “*Robust Optimization for Robust Robotics*”.
- Dec 2016 **German-French Conference on Humanoid and Legged Robots, Toulouse**, “*Robustness to Joint-Torque Tracking Errors in Task-Space Inverse Dynamics*”.
- Nov 2016 **Workshop IMT-LAAS, Toulouse**, “*Current challenges in motion generation for legged robots*”.
- Jun 2016 **ICRA 2016, Stockholm**, *Workshop “Robust Optimization-Based Planning and Control for Legged Robots”*, “Robustness to Joint-Torque Tracking Errors in Task-Space Inverse Dynamics”.
- Jul 2015 **RSS 2015, Rome**, *Workshop “Towards a unifying framework for whole-body and manipulation control”*, “Robust Inverse Dynamics and Prioritized Optimal Control”.
- Nov 2014 **Humanoids 2014, Madrid**, *Workshop “Redundancy, inequalities, and the mathematical tools to address them”*, “Hierarchy of Tasks: towards Real-Time Inverse Dynamics and Optimal Control”.
- Sep 2014 **IROS 2014, Chicago**, *Workshop “Whole-Body Control for Robots in the Real World”*, “Joint-Torque Control with Electric Motors and Harmonic Drives”.
- Sep 2014 **IROS 2014, Chicago**, *Workshop “Real-time Motion Generation and Control — Constraint-based Robot Programming”*, “Hierarchy of Tasks: towards Real-Time Inverse Dynamics and Optimal Control”.
- Oct 2013 **Humanoids 2013, Atlanta**, *Workshop “Torque-Controlled Humanoids”*, “Motion-Force Control & Prioritized Optimal Control”.
- Sep 2013 **LAAS/CNRS, Toulouse**, “*Motion-Force Control of Humanoid Robots*”.
- May 2013 **ETH, Zurich**, “*Motion-Force Control of Legged Robots*”.

May 2013 **ICRA 2013, Karlsruhe**, *Workshop “Whole-body Compliant Dynamical Contacts for Humanoid Robotics”*, “Motion-Force Control of Humanoid Robots”.

May 2013 **ICRA 2013, Karlsruhe**, *Workshop “Developments of Simulation Tools for Robotics & Biomechanics”*, “Software Tools for Dynamics, Simulation, Identification, Estimation and Control the Open-Source iCub Project”.

Invited Lectures

July 2020 **Virtual summer school**, *Organized by EU H2020 Memmo*, “Task-Space Inverse Dynamics, University of Oxford (UK).

Jan 2019 **Winter school**, *Organized by EU H2020 Memmo*, “Task-Space Inverse Dynamics”, Martigny (Switzerland).

Projects and Awards

July 2023 **Best Poster Award**, *Virtual Poster Session, IEEE Technical Committee on Model-Based Optimization for Robotics*, “CACTO: Continuous Actor-Critic with Trajectory Optimization”.

Oct 2023 **Best Paper Award**, *Workshop “3rd RL-CONFORM: RL meets HRI, Control and Formal Methods”*, at IEEE/RSJ Int. Conf. on Intelligent Robots and Systems, Detroit, “CACTO-SL: Using Sobolev Learning to improve Continuous Actor-Critic with Trajectory Optimization”.

Oct 2023 **PRIN (Italian Project)**, *“STARLIT: SafeTy Aware Reinforcement Learning for robotic inspection”*, Role: Principal Investigator, Duration: 24 months. Budget: 200 K

Teaching activities at University of Trento

Since 2020/2021 **Computer science**, *Bachelor degree course*, Lecturer, 60 hours.

Since 2019/2020 **Advanced optimization-based robot control**, *Master degree course*, Lecturer, 48 hours.

2019/2020 **Advanced computer programming**, *Bachelor degree course*, Lecturer, 40 hours.

2018/2019 **Automatic control**, *Master degree course*, Co-lecturer, 28 hours.

2018/2019 **Optimization-Based Robot Control**, *PhD course*, Lecturer, 12 hours.

Miscellaneous

2019-2025 **ASN**, *National (Italian) Scientific Qualification for Associate Professor positions in Robotics and Automation*, ING-INF/04.

2019-Present **PhD School member**, *Doctoral School in Materials, Mechatronics and Systems Engineering*, University of Trento.

2009 **Computer engineering professional qualification**, *University of Bologna*.

Languages

Italian	Native speaker
English	Fluent
French	Good