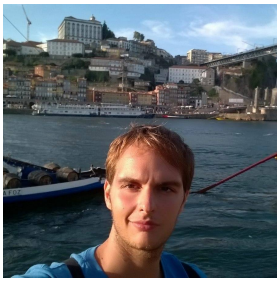

Pierluigi Arpenti

Università degli Studi di Napoli Federico II, department of Electrical Engineering and Information Technology, PRISMA Lab and ICAROS – Naples, Italy

Birth date: 10 February 1990
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CURRENT EMPLOYMENT

Fixed term assistant professor (RTD-A) at Università degli Studi di Napoli Federico II, department of Electrical Engineering and Information Technology, PRISMA Lab and ICAROS center.

RESEARCH INTERESTS

Legged robotics, passivity-based control, soft-robotics, robotics for logistics.

EDUCATION

Jan. 2018 – Jul. 2021
Ph.D. in Information Technology and Electrical Engineering
Università degli Studi di Napoli Federico II
Thesis: Energy Shaping of Underactuated Systems via Interconnection and Damping Assignment Passivity-Based Control with Applications to Planar Biped Robots.

Jan. 2013 – Sep. 2016
M. Sc. in Automation Engineering
Università degli Studi di Napoli Federico II
Thesis: A High-Level Control Architecture for Simultaneous Localization, 3D Mapping and Navigation for Mobile Robots.

Sep. 2009 – Jan. 2013
B. Sc. in Automation Engineering
Università degli Studi di Napoli Federico II
Thesis: Analysis of the RTAI-LAB Tool for Automatic Synthesis of Real-Time Tasks (translated from Italian).

RESEARCH AND PROFESSIONAL EXPERIENCES

Mar. 2024 – Now
Fixed term assistant professor (RTD-A)
Università degli Studi di Napoli Federico II, department of Electrical Engineering and Information Technology, PRISMA Lab and ICAROS center.
Work topic: passivity-based control for legged robots and assistive exoskeletons.

Jan. 2022 – Feb. 2024
Post-doc
Università degli Studi di Napoli Federico II, department of Electrical Engineering and Information Technology, PRISMA Lab.
Work topic: passivity-based control for legged robots.

PROJECTS

Mar. 2024 – now	**Assistant Researcher** Fit4MedRob: Fit for Medical Robotics NRRP - (Code: PNC0000007)
Oct. 2022 – now	**Assistant Researcher** COWBOT: preCision livestOck farming With collaBorative heterOgeneous roboT teams PRIN 2020 - (Code: 2020NH7EAZ)
Sep. 2019 – Aug. 2022	**Assistant Researcher** PRINBOT: Grapevine Recognition and Winter Pruning Automation Based on Innovative Robots PRIN 2017
Mar. 2019 – Aug. 2021	**Assistant Researcher** WELDON: Walking robots: A connection between legged robots and nonprehensile manipulation STAR 2018
Mar. 2018 – Dec. 2020	**Assistant Researcher** REFILLS: Robotics Enabling Fully-Integrated Logistics Lines for Supermarkets STAR 2018

PUBLICATIONS

Journal articles

J9: Z. Xie, X. Gong, **P. Arpenti**, R. Zou, S. Zhou, W. Zhang, Z. Zhang, Y. Wang, "A novel model analysis of the effects of upper body dynamics on passive dynamic biped walkers," *Multibody System Dynamics*, Pages: 1–25, 2025, DOI: 10.1007/s11044-025-10068-y.

J8: Z. Xie, Y. Wang, X. Luo, **P. Arpenti**, F. Ruggiero, B. Siciliano, "Three-dimensional variable center of mass height biped walking using a new model and nonlinear model predictive control," *Mechanism and Machine Theory*, Vol. 197, Pages: 105651, 2024, DOI: 10.1016/j.mechmachtheory.2024.105651.

J7: E. Franco, **P. Arpenti**, A. Donaire, F. Ruggiero, "Integral IDA-PBC for Underactuated Mechanical Systems Subject to Matched and Unmatched Disturbances," *IEEE Control Systems Letters*, Vol. 8, Pages: 568–573, 2024, DOI: 10.1109/LCSYS.2024.3399474.

J6: Enrico Franco, **Pierluigi Arpenti**, Alejandro Donaire, "Integral passivity-based control of underactuated mechanical systems with state-dependent matched disturbances," *International Journal of Robust and Nonlinear Control*, Vol. 34, No. 5, Pages: 3565–3585, Mar. 2024, DOI: 10.1002/rnc.7151.

J5: M. Selvaggio, R. Moccia, **P. Arpenti**, R. Caccavale, F. Ruggiero, J. Cacace, F. Ficuciello, A. Finzi, V. Lippiello, L. Villani, B. Siciliano, "Robotics goes PRISMA," *Robotica*, Pages: 1–28, 2024 DOI: 10.1017/S026357472400033X.

J4: **P. Arpenti**, F. Ruggiero, V. Lippiello, "A Constructive Methodology for the IDA-PBC of Underactuated 2-DoF Mechanical Systems with Explicit Solution of PDEs," *International Journal of Control, Automation and Systems*, Vol. 20, No. 1, Pages: 283–297, Jan. 2022, DOI: 10.1007/s12555-020-0839-1.

J3: **P. Arpenti**, R. Caccavale, G. Paduano, G. A. Fontanelli, V. Lippiello, L. Villani, B. Siciliano, "RGB-D Recognition and Localization of Cases for Robotic Depalletizing in Supermarkets," *IEEE Robotics and Automation Letters*, Vol. 5, No. 4, Pages: 6233–6238, Oct. 2020, DOI: 10.1109/LRA.2020.3013936.

J2: G. A. Fontanelli, G. Paduano, R. Caccavale, **P. Arpenti**, V. Lippiello, L. Villani, B. Siciliano, "A Reconfigurable Gripper for Robotic Autonomous Depalletizing in Supermarket Logistics," *IEEE Robotics and Automation Letters*, Vol. 5, No. 3, Pages: 4612–4617, Jul. 2020, DOI: 10.1109/LRA.2020.3003283.

J1: R. Caccavale, **P. Arpenti** G. Paduano, G. A. Fontanelli, V. Lippiello, L. Villani, B. Siciliano, "A Flexible Robotic Depalletizing System for Supermarket Logistics," *IEEE Robotics and Automation Letters*, Vol. 5, No. 3, Pages: 4471–4476, Jul. 2020, DOI: 10.1109/LRA.2020.3000427.

Book chapters

B1: **P. Arpenti**, R. Caccavale, A. G. Fontanelli, V. Lippiello, G. Paduano, B. Siciliano, L. Villani, "Robots Working in the Backroom: Depalletization of Mixed-Case Pallets," *In: Villani, L., Natale, C., Beetz, M., Siciliano, B. (eds) Robotics for Intralogistics in Supermarkets and Retail Stores. Springer Tracts in Advanced Robotics. Springer, Cham.*, Vol. 148, Pages 81–115, Sep. 2022, DOI: 10.1007/978-3-031-06078-6_4, .

Conference papers

C9: R. Aliotta, **P. Arpenti**, F. Ruggiero, "Crutches-Like Bipedal Walker with a Reduced Number of Actuators," *2025 11th International Conference on Automation, Robotics, and Applications (ICARA)*, Pages 230–234, Feb. 12–14, 2025, Zagreb, Croatia, DOI: 10.1109/ICARA64554.2025.10977683.

C8: **P. Arpenti**, E. Franco, A. Donaire, "Integral passivity-based control of an underactuated hydraulic soft manipulator with uncertain nonlinear stiffness," *IFAC-PapersOnLine*, Vol. 58, No. 6, Pages 12–18 , Jun. 10–12, 2024, Besançon, France, DOI: 10.1016/j.ifacol.2024.08.249.

C7: A. Fimiani, **P. Arpenti**, M. Gatti, F. Ruggiero, "Sensorless Reduction of Cane Oscillations Aimed at Improving Robotic Grapevine Winter Pruning," *Proceedings of the 20th International Conference on Informatics in Control, Automation and Robotics (ICINCO 2023)*, Vol. 1, Pages 640–647, Nov. 13–15, 2023, Rome, Italy, DOI: 10.5220/0012182500003543.

C6: **P. Arpenti**, A. Donaire, F. Ruggiero, V. Lippiello, "Uniform Global Exponential Stabilizing Passivity-Based Tracking Controller Applied to Planar Biped Robots," *Proceedings of the 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems*, Pages: 6739–6745, Oct. 23–27, 2022, Kyoto, Japan, DOI: 10.1109/IROS47612.2022.9981206.

C5: A. Teimoorzadeh, A. Donaire, **P. Arpenti**, F. Ruggiero, "Robust energy shaping for mechanical systems with dissipative forces and disturbances," *Proceedings of the 2022 European Control Conference (ECC)*, Pages: 1409–1415, Jul. 12–15, 2022, London, United Kingdom, DOI: 10.23919/ECC55457.2022.9838430.

C4: **P. Arpenti**, A. Donaire, F. Ruggiero, V. Lippiello, "Energy pumping-and-damping for gait robustification of underactuated planar biped robots within the hybrid zero dynamics framework," *Proceedings of the 2020 IEEE-RAS 20th International Conference on Humanoid Robots (Humanoids)*, Pages: 415–421, Jul. 19–21, 2021, Munich, Germany, DOI: 10.1109/HUMANOIDS47582.2021.9555787.

C3: **P. Arpenti**, F. Ruggiero, V. Lippiello, "Interconnection and Damping Assignment Passivity-Based Control for Gait Generation in Underactuated Compass-Like Robots," *Proceedings of the 2020 IEEE International Conference on Robotics and Automation (ICRA)*, Pages: 9802–9808, 2020, Paris, France, DOI: 10.1109/ICRA40945.2020.9196598.

C2: M. Nacusse, **P. Arpenti**, F. Ruggiero, V. Lippiello, "Gait Generation for Underactuated Compass-Like Robots Using Dissipative Forces in the Controller," *IFAC-PapersOnLine*, Vol. 53, No. 2, Pages 9023–9030, Jul. 11–17, 2020, Berlin, Germany, DOI: 10.1016/j.ifacol.2020.12.2022.

C1: **P. Arpenti**, D. Serra, F. Ruggiero, V. Lippiello, "Control of the TORA System through the IDA-PBC without Explicit Solution of Matching Equations," *Proceedings of the 2019 Third IEEE International Conference on Robotic Computing (IRC)*, Pages: 381–385, Feb. 25–27, 2019, Naples, Italy, DOI: 10.1109/IRC.2019.00069.

Workshops - short papers

W1: **P. Arpenti**, R. Caccavale, G. A. Fontanelli, V. Lippiello, G. Paduano, B. Siciliano, L. Villani, "An Integrated Robotic Depalletizing System for Supermarkets' Backrooms," *3rd Italian Conference on Robotics and Intelligent Machines*, Fiera di Roma, Italy, October 08-10, 2023 **.**

TEACHING EXPERIENCES

University courses

- **Main instructor** of the Robotics and Industrial Automation course (5 credits - 40 h), Bachelor Degree in Mechatronics, Department of Electrical Engineering and Information Technology (2025-).
- **Teaching assistant** of the Robotics and Industrial Automation course (5 credits - 40 h), Bachelor Degree in Mechatronics Engineering, Department of Electrical Engineering and Information Technology (2024).
- **Main instructor** of the Robotics and Autonomous Sensors course (5 credits - 40 h), Master's Degree in Precision Livestock Farming, Department of Veterinary Medicine and Animal Production (2024-).
- **Teaching assistant** of the Foundations of Robotics course, Master degree in Automation Engineering (6 credits - 48 h), Department of Electrical Engineering and Information Technology (2018-2023).

Short courses

- **Main instructor** for the Master in Entrepreneurship and Innovation Management, University of Naples Parthenope (Oct. 2024).

As a teaching assistant I delivered lectures, assisted the faculty with classroom instruction, records, and assignments, prepared teaching material, hold meetings with students during office hours, and conference with students individually or in small groups.

ADVISING

Master's thesis students

7. Andrea Morghen (co-supervised with Prof. Bruno Siciliano) - Thesis title: to be defined
6. Luciana Ercolanese (co-supervised with Prof. Fabio Ruggiero) - Thesis title: to be defined
5. Emanuele Cuzzocrea (co-supervised with Prof. Fabio Ruggiero) - Thesis title: "Learning Locomotion Strategies for Push-and-Slide Tasks in Quadruped Robotics".
4. Riccardo Aliotta (co-supervised with Prof. Fabio Ruggiero) - Thesis title: "Reinforcment Learning for Quadruped Robots" (translated from italian).
3. Antonio Zampa (co-supervised with Prof. Fabio Ruggiero) - Thesis title: "Designing a Biped Robot for Locomotion Using Imitation Learning".
2. Andrea Fimiani (co-supervised with Prof. Fabio Ruggiero) - Thesis title: "Sensorless Reduction of Branches Oscillations in Robotic Grapevines Winter Pruning".
1. Giuseppe Del Prete (co-supervised with Prof. Fabio Ruggiero) - Thesis title: "Periodic Gait Generation For Passive Bipedal Robots Through Energy Shaping" (translated from italian).

PROFESSIONAL SERVICE

Editorial service

Associate editor for the 2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2025).

Associate editor for the 2025 IEEE International Conference on Robotics and Automation (ICRA 2025).

Associate editor for the 2024 IEEE International Conference on Robotics and Automation (ICRA 2024).

Chair/co-chair and program committees

Chair for the 20th International Conference on Informatics in Control, Automation and Robotics (ICINCO 2023) session: Decision Support System.

Reviewer

IEEE Transactions on Control System Technology (TCST); Frontiers in Robotics and AI; IEEE Transactions on Robotics (T-RO); IEEE Robotics and Automation Magazine (RAM); International Journal of Robotic Research (IJRR); IEEE Robotics and Automation Letters (RA-L); IEEE International Conference on Robotics and Automation (ICRA); IEEE/RJS International Conference on Intelligent Robots and Systems (IROS); Robotics Science and Systems (RSS); International Conference on Humanoid Robots (Humanoids); European Journal of Control; IEEE Transactions on Automatic Control (TAC); IEEE Control Systems Letters (L-CSS); Automatica; European Control Conference.

Sincerely,
Napoli, May 13, 2025